dependency on "information on other transform coefficients previously encoded/inserted into the data stream 32". Further, transform coefficients lying "beyond" the last non-zero coefficient L position may be inferred to be zero.

In order to finalize the description of Fig. 4, the outputs of entropy encoder 36 and inserter 40 are shown to be connected to a common output 48 of the apparatus via a switch 50, with the same connectivity existing between inputs for previously inserted/coded information of symbolization parameter determinator 38 and context adaptive entropy encoder 36 on the one hand and the outputs of entropy encoder 36 and inserter 40 on the other hand. Switch 50 connects output 48 with either one of the outputs of entropy encoder 36 and inserter 40 in the order mentioned above with respect to the various possibilities of using one, two or more scans for coding the transform coefficients.

In order to explain the common use of the parameterizable function with respect to context adaptive entropy encoder 36 and symbolization parameter determinator 38 in more specific terms, reference is made to Fig. 1. The function which is co-used by entropy encoder 36 and symbolization parameter determinator 38 is indicated at 52 in Fig. 1, namely $g(f(\boldsymbol{x}))$. The function is applied to a set of previously coded transform coefficients which may, as explained above, be defined to encompass those previously coded coefficients having a certain spatial relationship relative to the current coefficient. Specific embodiments for this function will be outlined in more detail below. Generally speaking, f is function which combines the set of previously coded coefficient levels into a scalar, wherein g is function which checks as to which interval the scalar lies in. In other words, the function $g(f(\boldsymbol{x}))$ is applied to a set $\boldsymbol{x}$ of transform coefficients previously coded. In Fig. 1, the transform coefficient 12 indicated by a small cross denotes, for example, the current transform coefficient, and the hatched transform coefficients 12 indicate the set $\boldsymbol{x}$ of transform coefficients to which function 52 is applied in order to obtain a symbolization parameter 46 and an entropy context index 54 indexing the context for the current transform coefficient x. As illustrated in Fig. 1, a local template, defining a relative spatial arrangement around the current transform coefficient may be used in order to determine the set $\boldsymbol{x}$ of relevant previously coded transform coefficients out of all previously coded transform coefficients. As can be seen in Fig. 1, the template 56 may encompass the immediately neighboring transform coefficient below and to the right of the current transform coefficient. By choosing the template like this, the symbol sequences 42 and 44 of transform coefficients on one diagonal of the scan 140 may be coded in parallel since none of the transform coefficients on a diagonal falls into the template 56 of another transform coefficient in the same diagonal. Naturally, similar templates may be found for row- and column-wise scans.

In order to provide more specific examples for the commonly used function *g(f(**x**))* and the corresponding function parameters, in the following such examples are provided using respective formulae. In particular, the apparatus of Fig. 4 may be configured such that the function 52 defining the relationship between a set $\boldsymbol{x}$ of previously coded transform coefficients on the one hand, and a context index number 54 indexing the context and the symbolization parameter 46 on the other hand, may be

$$g(f(\mathbf{x})) \text{ where } g(x)=\sum_{i=1}^{d_f}\delta'(x,n_i) \text{ and } f(\mathbf{x})=\sum_{i=1}^{d} w_i\cdot h\cdot\delta(x_i,t)$$

with

$$\delta(x,t)=\begin{cases}1 & |x|\geq t\\ 0 & |x|<t\end{cases} \quad \text{and} \quad \delta'(x,n)=\begin{cases}1 & x>n\\ 0 & x\leq n\end{cases}$$

where

t and $\{n_1,\ldots,n_{d_f}\}=\boldsymbol{n}$ and, optionally w_i, form the function parameter,

$\mathbf{x}=\{x_1,\ldots,x_d\}$ with x_i with $i\in\{1\ldots d\}$ representing a previously decoded transform coefficient i,

w_i are weighting values each of which may be equal to one or unequal to one, and

h is a constant or function of x_i.

It follows that $g(f(\mathbf{x}))$ lies within $[0,d_f]$. If $g(f(\mathbf{x}))$ is used to define an context index offset number ctx_{offset} which is summed-up along with at least one base context index offset number ctx_{base}, then the value range of resulting context index $ctx= ctx_{base} + ctx_{offset}$ is $[ctx_{base} ; ctx_{base} + d_f]$. Whenever it is mentioned that differing sets of contexts are used to entropy code symbols of symbol sequences 44, then ctx_{base} is chosen differently such that $[ctx_{base,1} ; ctx_{base} + d_f]$ does not overlap $[ctx_{base,2} ; ctx_{base} + d_f]$. This is, for example, true for

- transform coefficients belonging to transform blocks of differing size;
- transform coefficients belonging to transform blocks of differing information component type such as depth, luma, chroma and so forth;
- transform coefficients belonging to differing frequency portions of the same transform block;

transform coefficients relative to the current transform coefficient, i.e. based on a template around the current transform coefficient's position.

The apparatus may be further configured to determine a position of a last non-zero transform coefficient L among transform coefficients of a transform coefficient block 10 along a predetermined scan order 14, and to insert information on the position into the data stream 32, wherein the plurality of transform coefficients encompasses the transform coefficients from the last non-zero transform coefficient L to a beginning of the predetermined scan order, i.e. a DC component transform coefficient.

In a further embodiment, the symbolizer 34 may configured to use a modified first symbolization scheme for symbolization of the last transform coefficient L. According to the modified first symbolization scheme, merely non-zero transform coefficient levels within the first level interval 16 may be mapped, while a zero level is presumed not to apply for the last transform coefficient L. For example, the first bin of the truncated unary binarization may be suppressed for coefficient L.

The context adaptive entropy encoder may be configured to use a separate set of contexts for entropy encoding the first set of one or more symbols for the last non-zero transform coefficient, separate from contexts used in entropy encoding the first set of one or more symbols of other than the last non-zero transform coefficient.

The context adaptive entropy encoder may traverse the plurality of transform coefficients in an opposite scan order leading from the last non-zero transform coefficient to the DC transform coefficient of the transform coefficient block. This may or may not also apply for the second symbol sequences 42.

The apparatus may also be configured to code the plurality of transform coefficients into the data stream 32 in two scans, wherein the context adaptive entropy coder 36 may be configured to entropy encode the first symbols sequences 44 for the transform coefficients into the data stream 32 in an order corresponding to a first scan of the transform coefficients, wherein the inserter 40 is configured to subsequently insert the symbol sequences 42 for the transform coefficients having a transform coefficient level within the second level interval 18 into the data stream 32 in an order corresponding to an occurrence of the transform coefficients having a transform coefficient level within the second level interval 18 within a second scan of the transform coefficients. An example for a resulting data stream 32 is shown in Fig. 5a: it may comprise, optionally, ~~a~~in information 57 on the position of L, followed by the symbol sequences ~~42~~24 in entropy encoded form (at least some

in context adaptive entropy encoded form) and further followed by the symbol sequences 442 inserted directly or using, for example, bypass mode (equal probable alphabet).

In a further embodiment, the apparatus may be configured to code the plurality of transform coefficients into the data stream 232 sequentially in one scan, wherein the context adaptive entropy encoder 36 and the inserter 40 are configured to, for each transform coefficient in a scan order of the one scan, insert the symbol sequences 42 of respective transform coefficients having a transform coefficient level within the second level interval 18 into the data stream 32 immediately subsequent to the context adaptive entropy coder's entropy encoding of the symbol sequence 44 into the data stream 32, along with which same form the combination onto which same transform coefficients are mapped, so that the symbol sequences 42 are interspersed into the data stream 32 between symbol sequences 44 of the transform coefficients. The result is illustrated in Fig. 5b.

The inserter 40 may be configured to insert the symbol sequences 42 into the data stream directly or using entropy encoding using a fixed probability distribution. The first symbolization scheme may be a truncated unary binarization scheme. The second symbolization scheme may be such that the symbol sequences 42 are of a Rice code.

As already noted above the embodiments of Fig. 4 may be implemented within an image/video coder. An example of such an image/video coder or picture coder is shown in Fig. 6. The picture encoder is generally indicated at reference sign 60 and comprises an apparatus 62 corresponding to the one shown in Fig. 4, for example. The encoder 60 is configured to, in encoding a picture 64, transform blocks 66 of the picture 64 into transform coefficient blocks 10 which are then treated by apparatus 62 so as to code, per transform block 10, a plurality of transform coefficients thereof. In particular, apparatus 62 processes transform blocks 10 transform block by transform block. In doing so, apparatus 62 may use function 52 for blocks 10 of different sizes. For example, an hierarchical multi-tree subdivision may be used in order to decompose picture 64 or tree-root blocks thereof, into blocks 66 of different sizes. The transform blocks 10 resulting from applying a transform to these blocks 66 are, accordingly, also of different size and although, accordingly, function 52 may be optimized for the different block sizes by way of using different function parameters, the overall overhead for providing such different dependencies for the symbolization parameter on the one hand and the context index on the other hand is kept low.

Fig. 7 shows an apparatus for decoding a plurality of transform coefficients having transform coefficient levels from a data stream 32 which fits to the apparatus outlined

part (coeff_abs_level_remaining[n] − cTRMax) with the Exp-Golomb order k set equal to cRiceParam + 1, for example.

It should be noted that above embodiments may be varied. For example, the dependency on the colour component index cIdx could be left away. Merely one color component yould, for example, be considered. Further, all of the explicit values could be varied. In so far, the just-outlined exmaples are to be interpreted broadly so as to also incorprate variations.

In the above example, the embodiments outlined above may advantageously be used in the following way. In particular, the determination of CtxIdxInc for coeff_abs_level_greater1_flag on the one hand and the symbolization parameter determination for coeff_abs_level_remaining is harmonized exploiting the above functions f and g by setting the function parameters in the following way.

To this end, Fig. 136 exemplarily shows a "current transform coefficient" illustrated with a cross 206. Same is representative for any transform coefficient with which any of the subsequently mentioned syntax elements are associated. It is positioned at (xP,yP)=(1,1) and (xC,yC)=(1,5) within current sub-block (xS,yS)=(0,1). Right-neighbor sub-block is at (xS,yS)=(1,1), bottom-neighbor sub-block is at (xS,yS)=(0,2) and the immediately previously coded sub-block depends on the scan path 202. Here, exemplarily, a diagonal scan 202 is shown, and the sub-block coded/decoded immediately preceding the current sub-bock is at (xS,yS)=(1,0).

Let's, again, rewrite the formulaes for the common parametrizable function

$$g(f(x)) = \sum_{i=1}^{d_f} \delta'(f(\boldsymbol{x}), n_i) \quad (1)$$

$$f(\boldsymbol{x}) = \sum_i w_i \times h(x_i) \times \delta(x_i, \mathrm{t}) \quad (2)$$

For selecting the context of significant_coeff_flag for current coefficient 206, the following could be computed by the entropy encoding/decoding apparatus. That is, same would use function (1) with (2) with having the function parameters *t*, *h* and *w* set as follows:

For function (2), $w_i = 1$ for all x_i within the neighboring sub-blocks to the right and to below of, the current sub-block, and $w_i=0$ elsewhere in block 10;

$h(x_i) = 1$ for all x_i within the neighboring sub-block to the right of the current sub-block; if present, same has been previously scanned in the sub-block scan 202; in case,

Claims

1. An apparatus for decoding a plurality of transform coefficients having transform coefficient levels from a data stream, comprising

a context adaptive entropy decoder configured to, for a current transform coefficient, entropy decode a first set of one or more symbols from the data stream;

a desymbolizer configured to map the first set of one or more symbols onto a transform coefficient level within a first level interval in accordance with a first symbolization scheme;

an extractor configured to, if the transform coefficient level onto which the first set of one or more symbols is mapped in accordance with the first symbolization scheme is a maximum level of the first level interval, extract a second set of symbols from the data stream,

wherein the desymbolizer is configured to map the second set of symbols onto a position within a second level interval in accordance with a second symbolization scheme which is parameterizable in accordance with a symbolization parameter,

wherein the context adaptive entropy decoder is configured to, in entropy decoding at least one predetermined symbol of the first set of one or more symbols from the data stream, use a context depending, via a function parameterizable via a function parameter, with the function parameter set to a first setting, on previously decoded transform coefficients, and

wherein the apparatus further comprises a symbolization parameter determinator configured to, if the transform coefficient level onto which the first set of one or more symbols is mapped in accordance with the first symbolization scheme is a maximum level of the first level interval, determine the symbolization parameter depending, via the function with the function parameter set to a second setting, on the previously decoded transform coefficients.

2. ~~Apparatus according to claim 1,~~ wherein the apparatus is configured such that the function defining the relationship between the previously decoded transform

coefficients on the one hand, and a context index offset number for indexing the context, and the symbolization parameter on the other hand, is

$$g(f(\mathbf{x})) \text{ where } g(x)=\sum_{i=1}^{d_f}\delta'(x,n_i) \text{ and } f(\mathbf{x})=\sum_{i=1}^{d} w_i\cdot h\cdot\delta(x_i,t)$$

with

$$\delta(x,t)=\begin{cases}1 & |x|\geq t\\ 0 & |x|<t\end{cases} \quad \text{and} \quad \delta'(x,n)=\begin{cases}1 & x>n\\ 0 & x\leq n\end{cases}$$

where

t, w_i and $\{n_1,\ldots,n_{d_f}\}=\boldsymbol{n}$ form the function parameter,
$\mathbf{x}=\{x_1,\ldots,x_d\}$ with x_i with $i\in\{1\ldots d\}$ representing a previously decoded transform coefficient i,
w_i are weighting values each of which may be equal to one or unequal to one, and
h is a constant or function of x_i.

32. Apparatus according to claim 21, wherein the context adaptive entropy coder is configured such that the dependency of the context from the previously decoded transform coefficients via the function is

such that x_i is equal to the transform coefficient level of the previously decoded transform coefficient i in case same is within the first level interval, and is equal to the maximum level of the first level interval, in case of the transform coefficient level of the previously decoded transform coefficient i being within the second level interval, or

such that x_i is equal to the transform coefficient level of the previously decoded transform coefficient i, independent from the transform coefficient level of the previously decoded transform coefficient i being within the first or second level interval.

43. Apparatus according to claim ~~21~~ 1 or 32, wherein the symbolization parameter setter is configured such that the dependency of the symbolization parameter on the previously decoded transform coefficients via the function is

such that x_i is equal to the transform coefficient level of the previously decoded transform coefficient *i*, independent from the transform coefficient level of the previously decoded transform coefficient *i* being within the first or second level interval.

54. Apparatus according to any of claims ~~2~~ 1 to 43, wherein the apparatus is configured such that $n_1 \leq \ldots \leq n_{d_f}$.

65. Apparatus according to any of claims ~~2~~ 1 to ~~5~~4, wherein the apparatus is configured such that *h* is $|x_i| - t$.

76. Apparatus according to any of claims 1 to ~~6~~5, wherein the apparatus is configured to spatially determine the previously coded transform coefficients depending on a relative spatial arrangement of the transform coefficients relative to the current transform coefficient.

87. Apparatus according to any of claims 1 to ~~7~~6, wherein the apparatus is configured to extract information on a position of a last non-zero transform coefficient among transform coefficients of a transform coefficient block along a predetermined scan order from the data stream, wherein the plurality of transform coefficients encompasses the transform coefficients from the last non-zero transform coefficient along the scan order to a DC transform coefficient of the transform coefficient block.

98. Apparatus according to claim ~~8~~7, wherein the symbolizer is configured to use a modified first symbolization scheme for mapping of the first set of one or more symbols of the last non-zero transform coefficient, in which merely non-zero transform coefficient levels within the first level interval are involved, while a zero level is presumed not to apply for the last transform coefficient.

~~10~~9. Apparatus according to claim ~~8~~7 or 98, wherein the context adaptive entropy decoder is configured to use a separate set of contexts for entropy decoding the first set of one or more symbols for the last non-zero transform coefficient, separate from contexts used in entropy decoding the first set of one or more symbols of other than the last non-zero transform coefficient.

~~11~~10. Apparatus according to any of claims ~~8~~7 to ~~10~~9, wherein the context adaptive entropy decoder traverses the plurality of transform coefficients in an opposite scan order leading from the last non-zero transform coefficient to the DC transform coefficient of the transform coefficient block.

~~12~~11. Apparatus according to any of claims 1 to ~~11~~10, wherein the apparatus is configured to decode the plurality of transform coefficients from the data stream in two scans, wherein the context adaptive entropy decoder is configured to entropy decode the first set of symbols for the transform coefficients from the data stream in an order corresponding to a first scan of the transform coefficients, wherein the extractor is configured to subsequently extract the second set of symbols for the transform coefficients for which the first set of symbols is mapped onto the maximum level of the first level interval from the data stream in an order corresponding to an occurrence of the transform coefficients for which the first set of symbols is mapped onto the maximum level of the first level interval within a second scan of the transform coefficients.

~~13~~12. Apparatus according to any of claims 1 to ~~12~~11, wherein the apparatus is configured to decode the plurality of transform coefficients from the data stream sequentially in one scan, wherein the second sets of symbols are interspersed within the data stream between first sets of symbols of the transform coefficients, and wherein the context adaptive entropy decoder and the extractor are configured to, for each transform coefficient in a scan order of the one scan, extract the second sets of symbols of respective transform coefficients for which the first set of symbols is mapped onto the maximum level of the first level interval from the data stream immediately subsequent to the context adaptive entropy decoder's entropy decoding of the first set of one or more symbols of the respective transform coefficients for which the first set of symbols is mapped onto the maximum level of the first level interval from the data stream.

~~14~~13. Apparatus according to any of the previous claims, wherein the extractor is configured to extract the second set of symbols from the data stream directly or using entropy decoding using a fixed probability distribution.

~~15~~14. Apparatus according to any of the previous claims, wherein the first symbolization scheme is a truncated unary binarization scheme.

~~16~~15. Apparatus according to any of the previous claims, wherein the second symbolization scheme is such that the second set of symbols is of a Rice code.

~~17~~16. Picture decoder comprising an apparatus according to any of the previous claims, wherein the picture decoder is configured to, in decoding a picture, retransform blocks of the picture from transform coefficient blocks, wherein the apparatus is configured to sequentially decode a plurality of transform coefficients of the transform coefficient blocks, transform coefficient block by transform coefficient block, with using the function for transform coefficient blocks of different sizes, for transform coefficient blocks of different sizes, and/or for transform coefficient blocks of different information component type.

~~18~~17. Picture decoder according to claim ~~17~~16, wherein the apparatus is configured to use different sets of contexts out of which the context for the current transform coefficient is selected depending on the previously decoded transform coefficients, for different frequency portions of the transform coefficient blocks, for transform coefficient blocks of different sizes, and/or for transform coefficient blocks of different information component type.

~~19~~18. An apparatus for coding a plurality of transform coefficients having transform coefficient levels into a data stream, comprising

a symbolizer configured to map a current transform coefficient

onto a first set of one or more symbols in accordance with a first symbolization scheme, if the current transform coefficient's transform coefficient level is within a first level interval, and

if the current transform coefficient's transform coefficient level is within a second level interval, onto a combination of a second set of symbols onto which a maximum level of the first level interval is mapped in accordance with the first symbolization scheme, and a third set of symbols depending on a position of the current transform coefficient's transform coefficient level within the second level interval, in accordance with a second symbolization scheme which is parameterizable in accordance with a symbolization parameter;

a context adaptive entropy encoder configured to, if the current transform coefficient's transform coefficient level is within the first level interval, entropy encode the first set of one or more symbols into the data stream, and, if the current transform coefficient's transform coefficient level is within the second level interval, entropy encode the second set of one or more symbols into the data stream, wherein the context adaptive entropy encoder is configured to, in entropy encoding at least one predetermined symbol of the second set of one or more symbols into the data stream, use a context depending, via a function parameterizable via a function parameter, with the function parameter set to a first setting, on previously coded transform coefficients; and

a symbolization parameter determinator configured to, if the current transform coefficient's transform coefficient level is within the second level interval, determine the symbolization parameter for the mapping onto the third set of symbols depending, via the function with the function parameter set to a second setting, on the previously coded transform coefficients; and

an inserter configured to, if the current transform coefficient's transform coefficient level is within the second level interval, insert the third set of symbols into the data stream.

20. ~~Apparatus according to claim 19,~~ wherein the apparatus is configured such that the function defining the relationship between the previously coded transform coefficients on the one hand, and a context index number indexing the context, and the symbolization parameter on the other hand, is

$$g(f(\mathbf{x})) \text{ where } g(x)=\sum_{i=1}^{d_f}\delta'(x,n_i) \text{ and } f(\mathbf{x})=\sum_{i=1}^{d} w_i \cdot h \cdot \delta(x_i,t)$$

with

$$\delta(x,t)=\begin{cases}1 & |x|\geq t\\ 0 & |x|<t\end{cases} \quad \text{and} \quad \delta'(x,n)=\begin{cases}1 & x>n\\ 0 & x\leq n\end{cases}$$

where

t, w_i and $\{n_1,\ldots,n_{d_f}\}=\boldsymbol{n}$ form the function parameter,

$\mathbf{x} = \{x_1, \ldots, x_d\}$ with x_i with $i \in \{1 \ldots d\}$ representing a previously decoded transform coefficient i,
w_i are weighting values each of which may be equal to one or unequal to one, and
h is a constant or function of x_i.

~~21~~19. Apparatus according to claim ~~20~~18, wherein the context adaptive entropy encoder is configured such that the dependency of the context from the previously coded transform coefficients via the function is

such that x_i is equal to the transform coefficient level of the previously coded transform coefficient i in case same is within the first level interval, and is equal to the maximum level of the first level interval, in case of the transform coefficient level of the previously coded transform coefficient i being within the second level interval, or

such that x_i is equal to the transform coefficient level of the previously coded transform coefficient i, independent on the transform coefficient level of the previously coded transform coefficient i being within the first or second level interval.

~~22~~20. Apparatus according to claim ~~20~~18 or ~~21~~19, wherein the symbolization parameter determinator is configured such that the dependency of the symbolization parameter on the previously coded transform coefficients via the function is

such that x_i is equal to the transform coefficient level of the previously coded transform coefficient i, independent from the transform coefficient level of the previously coded transform coefficient i being within the first or second level interval.

~~23~~21. Apparatus according to any of claims ~~20~~18 to ~~22~~20, wherein the apparatus is configured such that $n_1 \leq \ldots \leq n_{d_f}$.

~~24~~22. Apparatus according to any of claims ~~20~~18 to ~~23~~21, wherein the apparatus is configured such that h is $|x_i| - t$.

~~25~~23. Apparatus according to any of claims ~~19~~18 to ~~24~~22, wherein the apparatus is configured to spatially determine the previously coded transform coefficients depending on a

relative spatial arrangement of the transform coefficients relative to the current transform coefficient.

2624. Apparatus according to any of claims ~~19~~ 18 to ~~25~~23, wherein the apparatus is configured to determine a position of a last non-zero transform coefficient among transform coefficients of a transform coefficient block along a predetermined scan order , and to insert information on the position into the data stream, wherein the plurality of transform coefficients encompasses the transform coefficients from the last non-zero transform coefficient to a beginning of the predetermined scan order.

2725. Apparatus according to claim ~~26~~24, wherein the symbolizer is configured to use a modified first symbolization scheme for symbolization of the last transform coefficient in which merely non-zero transform coefficient levels within the first level interval are involved, while a zero level is presumed not to apply for the last transform coefficient.

2826. Apparatus according to claim ~~26~~ 24 or ~~27~~25, wherein the context adaptive entropy encoder is configured to use a separate set of contexts for entropy encoding the first set of one or more symbols for the last non-zero transform coefficient, separate from contexts used in entropy encoding the first set of one or more symbols of other than the last non-zero transform coefficient.

2927. Apparatus according to any of claims ~~26~~ 24 to ~~28~~26, wherein the context adaptive entropy encoder is configured to traverse the plurality of transform coefficients in an opposite scan order leading from the last non-zero transform coefficient to the DC transform coefficient of the transform coefficient block.

3028 Apparatus according to any of claims ~~19~~ 18 to ~~29~~27, wherein the apparatus is configured to code the plurality of transform coefficients into the data stream in two scans, wherein the context adaptive entropy coder is configured to entropy encode the first and second sets of symbols for the transform coefficients into the data stream in an order corresponding to a first scan of the transform coefficients, wherein the inserter is configured to subsequently insert the third set of symbols for the transform coefficients having a transform coefficient level within the second level interval into the data stream in an order corresponding to an occurrence of the transform coefficients having a transform coefficient level within the second level interval within a second scan of the transform coefficients.

~~31~~29. Apparatus according to any of claims ~~19~~–18 to ~~30~~28, wherein the apparatus is configured to code the plurality of transform coefficients into the data stream sequentially in one scan, wherein the context adaptive entropy encoder and the inserter are configured to, for each transform coefficient in a scan order of the one scan, insert the third sets of symbols of respective transform coefficients having a transform coefficient level within the second level interval into the data stream immediately subsequent to the context adaptive entropy coder's entropy encoding of the second set of one or more symbols of the respective transform coefficients having a transform coefficient level within the second level interval into the data stream so that the third sets of symbols are interspersed into the data stream between first and second sets of symbols of the transform coefficients.

~~32~~30. Apparatus according to any of claims ~~19~~–18 to ~~31~~29, wherein the inserter is configured to insert the third set of symbols into the data stream directly or using entropy encoding using a fixed probability distribution.

~~33~~31. Apparatus according to any of claims ~~19~~–18 to ~~32~~30, wherein the first symbolization scheme is a truncated unary binarization scheme.

~~34~~32. Apparatus according to any of the claims ~~19~~–18 to ~~33~~31, wherein the second symbolization scheme is such that the third set of symbols is of a Rice code.

~~35~~33. Picture encoder comprising an apparatus according to any of claims ~~19~~-18 to ~~34~~32, wherein the picture encoder is configured to, in encoding a picture, transform blocks of the picture into transform coefficient blocks, wherein the apparatus is configured to code a plurality of transform coefficients of the transform coefficient blocks, transform coefficient block by transform coefficient block, with using the function for blocks of different sizes.

~~36~~34. Picture encoder according to claim ~~35~~33, wherein the apparatus is configured to use different sets of contexts out of which the context for the current transform coefficient is selected depending on the previously coded transform coefficients, for different frequency portions of the transform coefficient blocks.

~~37. An apparatus for decoding a plurality of transform coefficients of different transform blocks, each having a transform coefficient level, from a data stream, comprising~~

an extractor configured to extract a set of symbols from the data stream for a current transform coefficient;

a desymbolizer configured to map the set of symbols onto a transform coefficient level for the current transform coefficient in accordance with a symbolization scheme which is parameterizable in accordance with a symbolization parameter, and

a symbolization parameter determinator configured to determine the symbolization parameter for the current transform coefficient depending, via a function parameterizable via a function parameter, on previously processed transform coefficients,

wherein the extractor, the symbolizer and the symbolization parameter determinator are configured to sequentially process the transform coefficients of the different transform blocks, wherein the function parameter varies depending on a size of the current transform coefficient's transform block, an information component type of the current transform coefficient's transform block and/or a frequency portion the current transform coefficient is located within the transform block.

38. Apparatus according to claim 37, wherein the apparatus is configured such that the function defining the relationship between the previously decoded transform coefficients on the one hand, and the symbolization parameter on the other hand, is

$$g(f(\mathbf{x})) \text{ where } g(x)=\sum_{i=1}^{d_f}\delta'(x,n_i) \text{ and } f(\mathbf{x})=\sum_{i=1}^{d} w_i \cdot h \cdot \delta(x_i,t)$$

with

$$\delta(x,t)=\begin{cases}1 & |x|\geq t\\ 0 & |x|<t\end{cases} \text{ and } \delta'(x,n)=\begin{cases}1 & x>n\\ 0 & x\leq n\end{cases}$$

where

t, w_i and $\{n_1,\ldots,n_{d_f}\}=\boldsymbol{n}$ form the function parameter,

$\mathbf{x}=\{x_1,\ldots,x_d\}$ with x_i with $i\in\{1\ldots d\}$ representing a previously processed transform coefficient i,

~~w_i are weighting values each of which may be equal to one or unequal to one, and h is a constant or function of x_i.~~

~~39. Apparatus according to claim 38, wherein the apparatus is configured such that $n_1 \leq \ldots \leq n_{d_f}$.~~

~~40. Apparatus according to claim 38 or 39, wherein the apparatus is configured such that h is $|x_i| - t$.~~

~~41. Apparatus according to any of claims 37 to 40, wherein the apparatus is configured to spatially determine the previously processed transform coefficients depending on a relative spatial arrangement relative to the current transform coefficient.~~

~~42. Apparatus according to any of claims 37 to 41, wherein the extractor is configured to extract the set of symbols from the data stream directly or using entropy decoding using a fixed probability distribution.~~

~~43. Apparatus according to any of claims 37 to 42, wherein the symbolization scheme is such that the set of symbols is of a Rice code, and the symbolization parameter is a RICE parameter.~~

~~44. Apparatus according to any of claims 37 to 43, wherein the desymbolizer is configured to restrict the symbolization scheme to a level interval out of a range interval of the transform coefficients so that the set of symbols represents a prefix or suffix with respect to other portions of an overall symbolization of the current transform coefficient.~~

~~45. An apparatus for coding a plurality of transform coefficients of different transform blocks, each having a transform coefficient level, into a data stream, comprising~~

~~a symbolizer configured to map a transform coefficient level for a current transform coefficient in accordance with a symbolization scheme which is parameterizable in accordance with a symbolization parameter, onto a set of symbols;~~

~~an inserter configured to insert the set of symbols for the current transform coefficient into the data stream; and~~

a symbolization parameter determinator configured to determine the symbolization parameter for the current transform coefficient depending, via a function parameterizable via a function parameter, on previously processed transform coefficients,

wherein the inserter, the symbolizer and the symbolization parameter determinator are configured to sequentially process the transform coefficients of the different transform blocks, wherein the function parameter varies depending on a size of the current transform coefficient's transform block, an information component type of the current transform coefficient's transform block and/or a frequency portion the current transform coefficient is located within the transform block.

46. Apparatus according to claim 45, wherein the apparatus is configured such that the function defining the relationship between the previously decoded transform coefficients on the one hand, and the symbolization parameter on the other hand, is

$$g(f(\mathbf{x})) \text{ where } g(x)=\sum_{i=1}^{d_f}\delta'(x,n_i) \text{ and } f(\mathbf{x})=\sum_{i=1}^{d} w_i \cdot h \cdot \delta(x_i,t)$$

with

$$\delta(x,t)=\begin{cases}1 & |x|\geq t\\ 0 & |x|<t\end{cases} \quad \text{and} \quad \delta'(x,n)=\begin{cases}1 & x>n\\ 0 & x\leq n\end{cases}$$

where

t, w_i and $\{n_1,\ldots,n_{d_f}\}=\boldsymbol{n}$ form the function parameter,

$\mathbf{x}=\{x_1,\ldots,x_d\}$ with x_i with $i\in\{1\ldots d\}$ representing a previously processed transform coefficient i,

w_i are weighting values each of which may be equal to one or unequal to one, and

h is a constant or function of x_i.

47. Apparatus according to claim 46, wherein the apparatus is configured such that $n_1\leq\ldots\leq n_{d_f}$.

48. Apparatus according to claim 46 or 47, wherein the apparatus is configured such that h is $|x_i|-t$.

~~49. Apparatus according to any of claims 46 to 48, wherein the apparatus is configured to spatially determine the previously processed transform coefficients depending on a relative spatial arrangement relative to the current transform coefficient.~~

~~50. Apparatus according to any of claims 46 to 49, wherein the inserter is configured to insert the set of symbols into the data stream directly or using entropy encoding using a fixed probability distribution.~~

~~51. Apparatus according to any of claims 46 to 50, wherein the symbolization scheme is such that the set of symbols is of a Rice code, and the symbolization parameter is a RICE parameter.~~

~~52. Apparatus according to any of claims 46 to 51, wherein the symbolizer is configured to restrict the symbolization scheme to a level interval out of a range interval of the transform coefficients so that the set of symbols represents a prefix or suffix with respect to other portions of an overall symbolization of the current transform coefficient.~~

~~53~~35. Method for decoding a plurality of transform coefficients having transform coefficient levels from a data stream, comprising

for a current transform coefficient, entropy decoding a first set of one or more symbols from the data stream;

desymbolization mapping the first set of one or more symbols onto a transform coefficient level within a first level interval in accordance with a first symbolization scheme;

if the transform coefficient level onto which the first set of one or more symbols is mapped in accordance with the first symbolization scheme is a maximum level of the first level interval, extract a second set of symbols from the data stream,

wherein the desymbolization mapping comprises mapping the second set of symbols onto a position within a second level interval in accordance with a second symbolization scheme which is parameterizable in accordance with a symbolization parameter,

the entropy decoding involves entropy decoding at least one predetermined symbol of the first set of one or more symbols from the data stream with using a context depending, via a function parameterizable via a function parameter, with the function parameter set to a first setting, on previously decoded transform coefficients, and

wherein the method further comprises

if the transform coefficient level onto which the first set of one or more symbols is mapped in accordance with the first symbolization scheme is a maximum level of the first level interval, determining the symbolization parameter depending, via the function with the function parameter set to a second setting, on the previously decoded transform coefficients,

wherein the method is performed such that the function defining the relationship between the previously decoded transform coefficients on the one hand, and a context index offset number for indexing the context, and the symbolization parameter on the other hand, is

$$g(f(\mathbf{x})) \text{ where } g(x)=\sum_{i=1}^{d_f}\delta'(x,n_i) \text{ and } f(\mathbf{x})=\sum_{i=1}^{d} w_i \cdot h \cdot \delta(x_i,t)$$

with

$$\delta(x,t)=\begin{cases}1 & |x|\geq t\\ 0 & |x|<t\end{cases} \text{ and } \delta'(x,n)=\begin{cases}1 & x>n\\ 0 & x\leq n\end{cases}$$

where

t, w_i and $\{n_1,\ldots,n_{d_f}\}=\boldsymbol{n}$ form the function parameter,

$\mathbf{x}=\{x_1,\ldots,x_d\}$ with x_i with $i\in\{1\ldots d\}$ representing a previously decoded transform coefficient i,

w_i are weighting values each of which may be equal to one or unequal to one, and

h is a constant or function of x_i.

~~54~~36. Method for coding a plurality of transform coefficients having transform coefficient levels into a data stream, comprising

Symbolization mapping a current transform coefficient

onto a first set of one or more symbols in accordance with a first symbolization scheme, if the current transform coefficient's transform coefficient level is within a first level interval, and

if the current transform coefficient's transform coefficient level is within a second level interval, onto a combination of a second set of symbols onto which a maximum level of the first level interval is mapped in accordance with the first symbolization scheme, and a third set of symbols depending on a position of the current transform coefficient's transform coefficient level within the second level interval, in accordance with a second symbolization scheme which is parameterizable in accordance with a symbolization parameter;

context adaptive entropy encoding including, if the current transform coefficient's transform coefficient level is within the first level interval, entropy encoding the first set of one or more symbols into the data stream, and, if the current transform coefficient's transform coefficient level is within the second level interval, entropy encoding the second set of one or more symbols into the data stream, wherein the

context adaptive entropy encoding involves, in entropy encoding at least one predetermined symbol of the second set of one or more symbols into the data stream, using a context depending, via a function parameterizable via a function parameter, with the function parameter set to a first setting, on previously coded transform coefficients; and

if the current transform coefficient's transform coefficient level is within the second level interval, determining the symbolization parameter for the mapping onto the third set of symbols depending, via the function with the function parameter set to a second setting, on the previously coded transform coefficients; and

if the current transform coefficient's transform coefficient level is within the second level interval, inserting the third set of symbols into the data stream,

wherein the method is performed such that the function defining the relationship between the previously coded transform coefficients on the one hand, and a context index number indexing the context, and the symbolization parameter on the other hand, is

$$g(f(\mathbf{x})) \text{ where } g(x)=\sum_{i=1}^{d_f}\delta'(x,n_i) \text{ and } f(\mathbf{x})=\sum_{i=1}^{d} w_i\cdot h\cdot\delta(x_i,t)$$

with

$$\delta(x,t)=\begin{cases}1 & |x|\geq t\\ 0 & |x|<t\end{cases} \text{ and } \delta'(x,n)=\begin{cases}1 & x>n\\ 0 & x\leq n\end{cases}$$

where

t, w_i and $\{n_1,\ldots,n_{d_f}\}=\boldsymbol{n}$ form the function parameter,

$\mathbf{x}=\{x_1,\ldots,x_d\}$ with x_i with $i\in\{1\ldots d\}$ representing a previously decoded transform coefficient i,

w_i are weighting values each of which may be equal to one or unequal to one, and

h is a constant or function of x_i.

~~55. Method for decoding a plurality of transform coefficients of different transform blocks, each having a transform coefficient level, from a data stream, comprising~~

~~extracting a set of symbols from the data stream for a current transform coefficient;~~

~~desymbolization mapping the set of symbols onto a transform coefficient level for the current transform coefficient in accordance with a symbolization scheme which is parameterizable in accordance with a symbolization parameter, and~~

~~determining the symbolization parameter for the current transform coefficient depending, via a function parameterizable via a function parameter, on previously processed transform coefficients,~~

~~wherein the extraction, the symbolization mapping and the determination are sequentially performed on the transform coefficients of the different transform blocks, wherein the function parameter varies depending on a size of the current transform coefficient's transform block, an information component type of the current transform coefficient's transform block and/or a frequency portion the current transform coefficient is located within the transform block.~~

~~56. Method for coding a plurality of transform coefficients of different transform blocks, each having a transform coefficient level, into a data stream, comprising~~

~~Symbolization mapping a transform coefficient level for a current transform coefficient in accordance with a symbolization scheme which is parameterizable in accordance with a symbolization parameter, onto a set of symbols;~~

~~inserting the set of symbols for the current transform coefficient into the data stream; and~~

~~determining the symbolization parameter for the current transform coefficient depending, via a function parameterizable via a function parameter, on previously processed transform coefficients,~~

~~wherein the insertion, the symbolization mapping and the determination are sequentially performed on the transform coefficients of the different transform blocks, wherein the function parameter varies depending on a size of the current transform coefficient's transform block, an information component type of the current transform coefficient's transform block and/or a frequency portion the current transform coefficient is located within the transform block.~~

~~57~~37. Computer program having a program code for performing, when running on a computer, a method according to ~~any of~~ claims ~~53~~ 35 ~~to~~r ~~56~~36.