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CLAIMS

1. A multifocal display device (100), comprising:
a display element (101) configured to generate an image with one or more colors,
10 a controller (102) configured to control the display element (101) according to a bit sequence (103) provided over a determined time period to generate the image, the bit sequence (103) including for each color a subsequence of bits of different significance, wherein for each color, neither the first bit nor the last bit of the subsequence is the most significant bit of the subsequence.
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2. The multifocal display device (100) according to claim 1, wherein the first bit and the last bit of the subsequence are the two least significant bits of the subsequence.
3. The multifocal display (100) device according to claim 2, wherein the
20 subsequence increases monotonically in significance from the first bit to the most significant bit of the subsequence and decreases monotonically in significance from the most significant bit to the last bit of the subsequence.
4. A multifocal display device (100) according to claim 1, 2, or 3, wherein the one
25 or more colors are two or more colors and their corresponding subsequences of bits are interleaved with each other.
5. The multifocal display device (100) according to any one of claims 1 to 4, wherein
30 the one or more colors include Green color and Red or Blue color, and the first bit or the last bit, or both the first bit and the last bit of the sequence (103) is for Red or Blue color.
6. The multifocal display device (100) according to any one of claims 1 to 5,
35 wherein even bits are arranged in the subsequence in an order reverse to an order of odd bits in the subsequence.

- 5 7. The multifocal display device (100) according to any one of claims 1 to 6,
 wherein
 the controller (102) is configured to provide the bits of the bit sequence (103) at
 irregular intervals over the determined time period.
- 10 8. The multifocal display device (100) according to any one of claims 1 to 7,
 wherein
 the controller (102) is configured to provide the bit sequence (103) offset in time
 from a start or an end of the determined time period.
- 15 9. The multifocal display device (100) according to any one of claims 1 to 8,
 further comprising:
 a storage (700) storing a plurality of bit groups (701), the bit sequence (103)
 being a concatenation of these bit groups (701),
 wherein the controller (102) is configured to control the display device (101)
20 according to a first bit group (701b) during a first section of the determined time period,
 and according to a second bit group (701a) during a second section of the determined
 time period.
10. The multifocal display device (100) according to one of claims 1 to 9, wherein
25 the display element (101) comprises a Digital Micromirror Device, DMD (201),
 or a Liquid Crystal On Silicon, LCOS,
 each bit of the bit sequence (103) determines an intensity of light for
 illuminating the DMD or the LCOS (201), and
 a lower significant bit relates to a lower illumination intensity of the light.
- 30 11. The multifocal display device (100) according to claim 10, further comprising:
 a color element (200) configured to provide the light for illuminating the DMD
 (201) or LCOS with different colors,
 wherein each bit of the bit sequence (103) relates to a color provided to the light.
- 35 12. The multifocal display device (100) according to one of claims 1 to 11, wherein

- 5 the bit sequence (103) includes at least 6 bits for each of a Red, Green and Blue color, in order to generate by the display element (101) an at least 18-bit color image.
13. The multifocal display device (100) according to one of claims 1 to 12, further comprising:
- 10 a focus tunable lens (202),
 wherein the controller (102) is configured to selectively tune the focus of the lens (202) to a plurality of focal planes of different index during a frame period, and to one of these focal planes during the determined time period.
- 15 14. The multifocal display device (100) according to claim 13, wherein
 the controller (102) is configured to control the display element (101) according to different bit sequences (103) in dependence of the focal plane index during the predetermined time period or in dependence of a focal plane index during a previous or next determined time period.
- 20 15. A method for providing a multifocal display, comprising steps of
 controlling a display element (101) according to a bit sequence (103) provided over a determined time period to generate an image with one or more colors, the bit sequence (103) including for each color a subsequence of bits of different significance,
25 wherein for each color, neither the first bit nor the last bit of the subsequence for the respective color is the most significant bit of the subsequence.
16. A computer program product comprising a program code for controlling a multifocal display device according to one of claims 1 to 14.
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