

WHAT IS CLAIMED IS:

CLAIMS

1. A method of wireless communication performed by a user equipment (UE), comprising:
 - receiving configuration information for a two-step random access channel (RACH) procedure,
 - wherein the configuration information identifies a plurality of physical uplink shared channel (PUSCH) configurations for a PUSCH of the two-step RACH procedure; and
 - transmitting the PUSCH in accordance with a PUSCH configuration, of the plurality of PUSCH configurations, wherein the PUSCH configuration is selected based at least in part on a payload size of a payload of the PUSCH an uplink RACH message, and wherein a preamble of the PUSCH is used to indicate the selected PUSCH configuration,
 - wherein the preamble of the PUSCH indicates a set of blind decoding hypotheses for a payload of the uplink RACH message;
 - wherein multiple blind decoding hypotheses are mapped to respective resource allocations in connection with the preamble; and
 - wherein at least two resource allocations, of the respective resource allocations, have different sizes.
2. The method of claim 1, wherein the preamble of the PUSCH indicates the payload size of the payload of the PUSCH uplink RACH message.
3. The method of claim 1, wherein transmitting the PUSCH in accordance with the PUSCH configuration comprises:
 - transmitting the PUSCH using a particular RACH occasion for the preamble of the PUSCH, wherein the particular RACH occasion indicates the payload size of the payload uplink RACH message or a PUSCH configuration of the a payload of the uplink RACH message.
4. The method of claim 1, wherein the preamble is associated with a first preamble group of a RACH occasion, and wherein a second preamble group of the RACH occasion is configured to indicate a different payload size of the payload uplink RACH message or a different PUSCH configuration than the first preamble group of the RACH occasion.

~~5. The method of claim 1, wherein the preamble of the PUSCH indicates a set of blind decoding hypotheses for the payload of the PUSCH.~~

~~6. The method of claim 5, wherein multiple blind decoding hypotheses are mapped to respective resource allocations in connection with the preamble.~~

~~7. The method of claim 6, wherein at least two resource allocations, of the respective resource allocations, have different sizes.~~

~~8. The method of claim 5, wherein multiple blind decoding hypotheses are mapped to a same resource allocation in connection with the preamble.~~

95. A method of wireless communication performed by a base station, comprising:
transmitting configuration information for a two-step random access channel (RACH) procedure for a user equipment (UE),

wherein the configuration information identifies a plurality of physical uplink shared channel (PUSCH) configurations for an uplink RACH message of the two-step RACH procedure;

receiving the PUSCH in accordance with a PUSCH configuration, of the plurality of PUSCH configurations, wherein the PUSCH comprises a preamble that indicates the PUSCH configuration of the plurality of PUSCH configurations used for communicating the PUSCH; and

determining the PUSCH configuration based at least in part on the preamble and a payload size of the uplink RACH message.

wherein the preamble of the PUSCH indicates a set of blind decoding hypotheses for a payload of the uplink RACH message;

wherein multiple blind decoding hypotheses are mapped to respective resource allocations in connection with the preamble; and

wherein at least two resource allocations, of the respective resource allocations, have different sizes.

106. The method of claim 95, wherein the preamble of the PUSCH indicates the payload size of the payload of the PUSCH uplink RACH message.

117. The method of claim 95, wherein receiving the PUSCH in accordance with the PUSCH configuration comprises:

receiving the PUSCH in a particular RACH occasion, wherein the particular RACH occasion indicates the payload size of the payload-uplink RACH message or the PUSCH configuration of ~~the~~ payload of the uplink RACH message.

128. The method of claim 95, wherein the preamble is associated with a first preamble group of a RACH occasion, and wherein a second preamble group of the RACH occasion is configured to indicate a different payload size of the uplink RACH message or PUSCH configuration of ~~the~~ payload of the uplink RACH message than the first preamble group of the RACH occasion.

~~13. The method of claim 9, wherein the preamble of the PUSCH indicates a set of blind decoding hypotheses for receiving the payload of the PUSCH.~~

~~14. The method of claim 13, wherein multiple blind decoding hypotheses are mapped to respective resource allocations in connection with the preamble.~~

~~15. The method of claim 14, wherein at least two resource allocations, of the respective resource allocations, have different sizes.~~

~~16. The method of claim 13, wherein multiple blind decoding hypotheses are mapped to a same resource allocation in connection with the preamble.~~

~~17. The method of claim 13, further comprising: performing blind decoding in accordance with the set of blind decoding hypotheses to receive the payload of the PUSCH.~~

189. A user equipment (UE) for wireless communication, comprising:

a memory; and

one or more processors coupled to the memory, the memory and the one or more processors configured to:

receive configuration information for a two-step random access channel (RACH) procedure, wherein the configuration information identifies a plurality of physical uplink shared channel (PUSCH) configurations for a PUSCH of the two-step RACH procedure; and

transmit the PUSCH in accordance with a PUSCH configuration, of the plurality of PUSCH configurations, wherein the PUSCH configuration is selected based at least in part on a payload size of a payload of the PUSCH an uplink RACH message, and wherein a preamble of the PUSCH is used to indicate the selected PUSCH configuration,

wherein the preamble of the PUSCH indicates a set of blind decoding hypotheses for a payload of the uplink RACH message;

wherein multiple blind decoding hypotheses are mapped to respective resource allocations in connection with the preamble; and

wherein at least two resource allocations, of the respective resource allocations, have different sizes.

1910. The UE of claim 189, wherein the preamble of the PUSCH indicates the payload size of the payload of the PUSCH uplink RACH message.

2011. The UE of claim 189, wherein the one or more processors, when transmitting the PUSCH in accordance with the PUSCH configuration, are further configured to:

transmit the PUSCH using a particular RACH occasion for the preamble of the PUSCH, wherein the particular RACH occasion indicates the payload size of the payload uplink RACH message or a PUSCH configuration of ~~the~~ a payload of the uplink RACH message.

2412. The UE of claim 189, wherein the preamble is associated with a first preamble group of a RACH occasion, and wherein a second preamble group of the RACH occasion is configured to indicate a different payload size of the payload uplink RACH message or a different PUSCH configuration than the first preamble group of the RACH occasion.

~~22. The UE of claim 18, wherein the preamble of the PUSCH indicates a set of blind decoding hypotheses for the payload of the PUSCH.~~

~~23. The UE of claim 22, wherein multiple blind decoding hypotheses are mapped to respective resource allocations in connection with the preamble.~~

~~24. The UE of claim 23, wherein at least two resource allocations, of the respective resource allocations, have different sizes.~~

~~25. The UE of claim 22, wherein multiple blind decoding hypotheses are mapped to a same resource allocation in connection with the preamble.~~

~~26~~13. A non-transitory computer-readable medium storing one or more instructions for wireless communication, the one or more instructions comprising:

one or more instructions that, when executed by one or more processors of a ~~user equipment~~base station, cause the one or more processors to:

transmit configuration information for a two-step random access channel (RACH) procedure for a user equipment (UE),

wherein the configuration information identifies a plurality of physical uplink shared channel (PUSCH) configurations for an uplink RACH message of the two-step RACH procedure;

receive the PUSCH in accordance with a PUSCH configuration, of the plurality of PUSCH configurations, wherein the PUSCH comprises a preamble that indicates the PUSCH configuration of the plurality of PUSCH configurations used for communicating the PUSCH; and

determine the PUSCH configuration based at least in part on the preamble and a payload size of the uplink RACH message,

wherein the preamble of the PUSCH indicates a set of blind decoding hypotheses for a payload of the uplink RACH message;

wherein multiple blind decoding hypotheses are mapped to respective resource allocations in connection with the preamble; and

wherein at least two resource allocations, of the respective resource allocations, have different sizes.

~~27~~14. The non-transitory computer-readable medium of claim ~~26~~13, wherein the preamble of the PUSCH indicates the payload size of the payload of the PUSCHuplink RACH message.

~~28~~15. The non-transitory computer-readable medium of claim ~~26~~13, wherein the one or more processors, when receiving the PUSCH in accordance with the PUSCH configuration, are

configured to receive the PUSCH in a particular RACH occasion, wherein the particular RACH occasion indicates the payload size of the uplink RACH message or the PUSCH configuration of a payload of the RACH message~~size of the payload or the PUSCH configuration of the payload~~.

2916. The non-transitory computer-readable medium of claim 2613, wherein the preamble is associated with a first preamble group of a RACH occasion, and wherein a second preamble group of the RACH occasion is configured to indicate a different payload size of the uplink RACH message or PUSCH configuration of the~~payload of the uplink RACH message~~ than the first preamble group of the RACH occasion.

~~30. The non-transitory computer-readable medium of claim 26, wherein the preamble of the PUSCH indicates a set of blind decoding hypotheses for receiving the payload of the PUSCH.~~