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(54) **METHOD AND APPARATUS FOR PROCESSING DATA IN A MULTIPLE-INPUT MULTIPLE-OUTPUT (MIMO) COMMUNICATION SYSTEM UTILIZING CHANNEL STATE INFORMATION**

(52) **U.S. Cl. 375/267; 375/260; 455/132**

(57) **ABSTRACT**

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Techniques to “successively” process received signals at a receiver unit in a MIMO system to recover transmitted data, and to “adaptively” process data at a transmitter unit based on channel state information available for the MIMO channel. A successive cancellation receiver processing technique is used to process the received signals and performs a number of iterations to provide decoded data streams. For each iteration, input (e.g., received) signals for the iteration are processed to provide one or more symbol streams. One of the symbol streams is selected and processed to provide a decoded data stream. The interference due to the decoded data stream is approximately removed (i.e., canceled) from the input signals provided to the next iteration. The channel characteristics are estimated and reported back to the transmitter system and used to adjust (i.e., adapt) the processing (e.g., coding, modulation, and so on) of data prior to transmission.

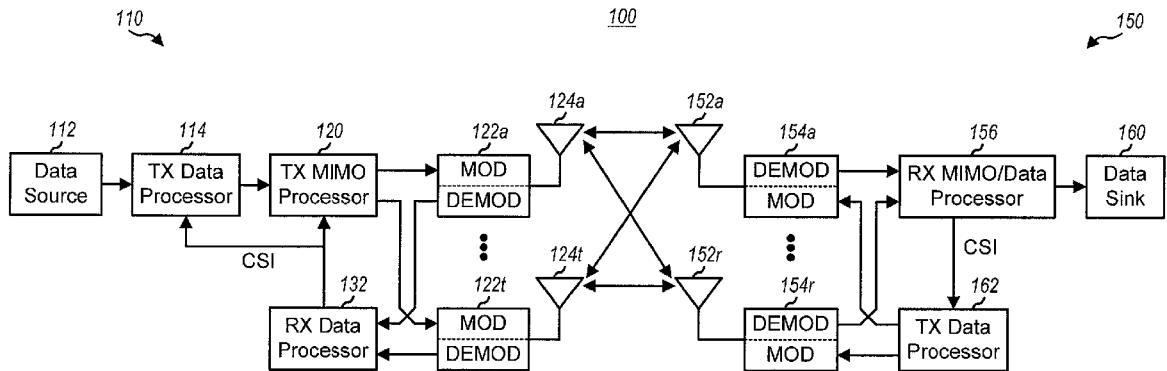
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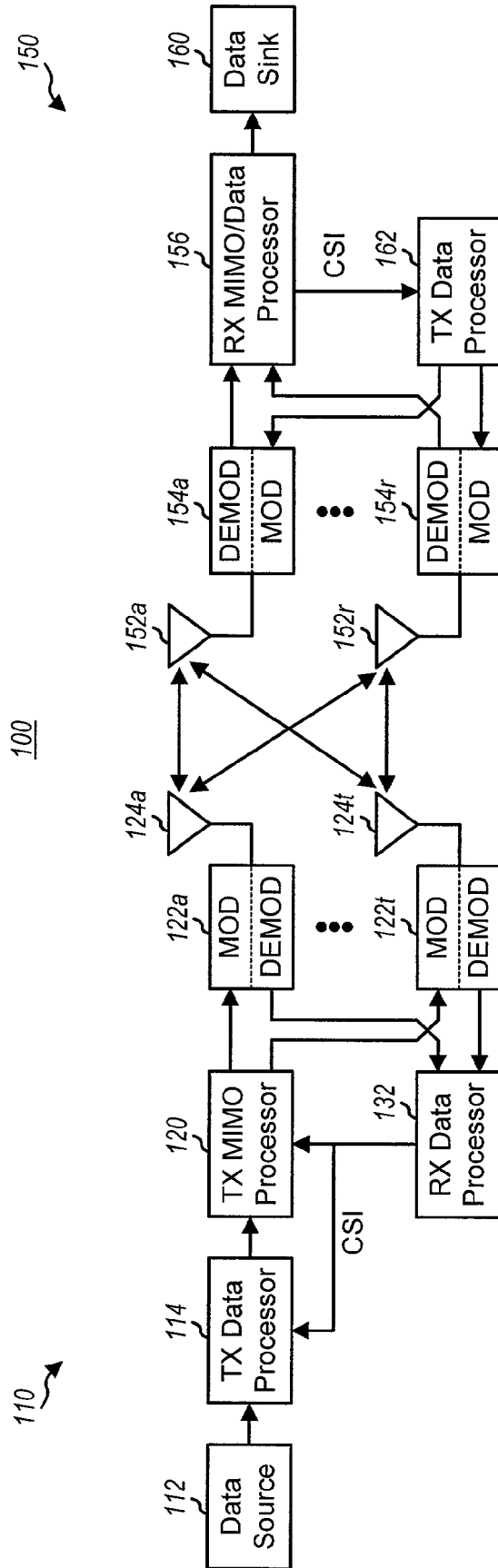


FIG. 1

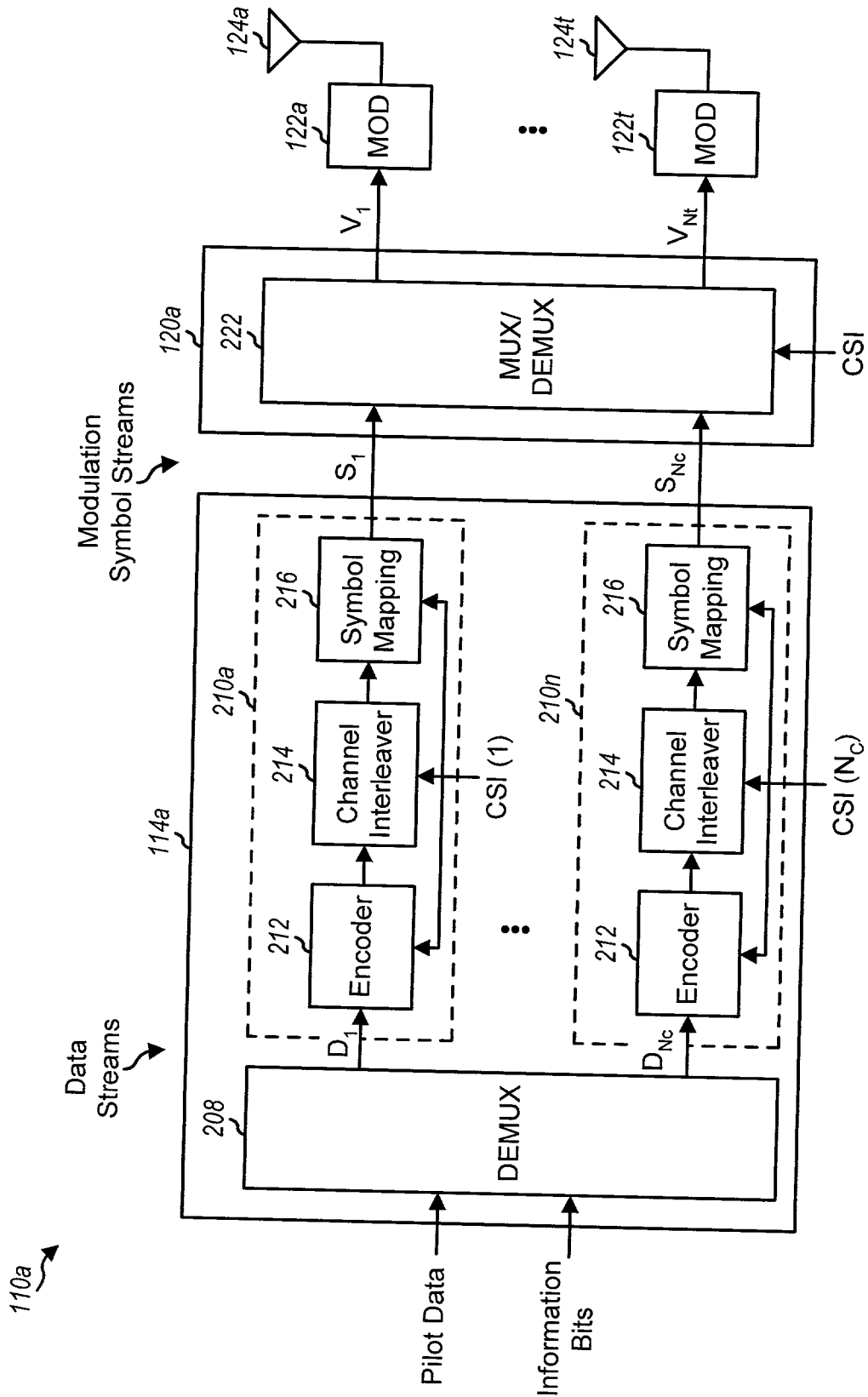


FIG. 2

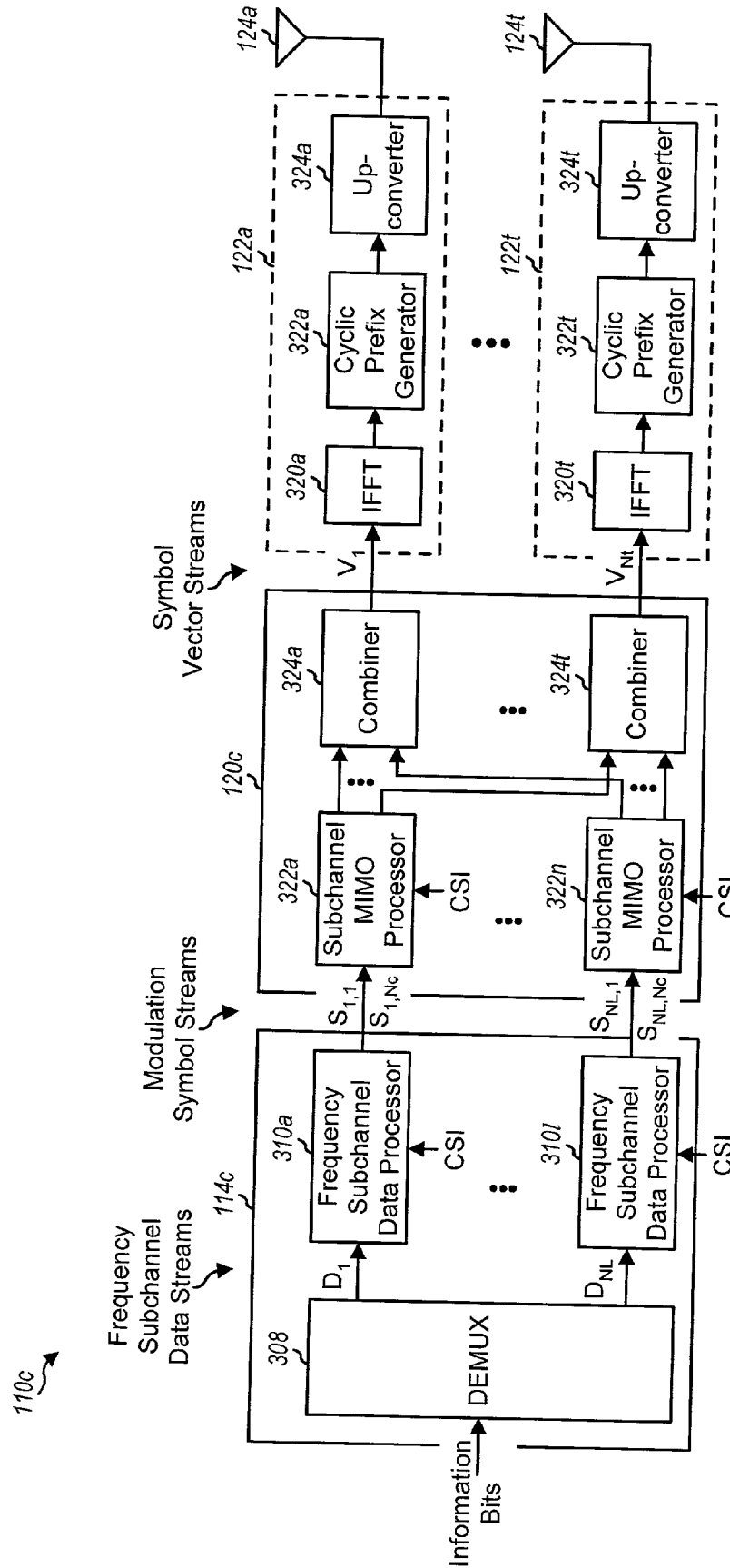


FIG. 3

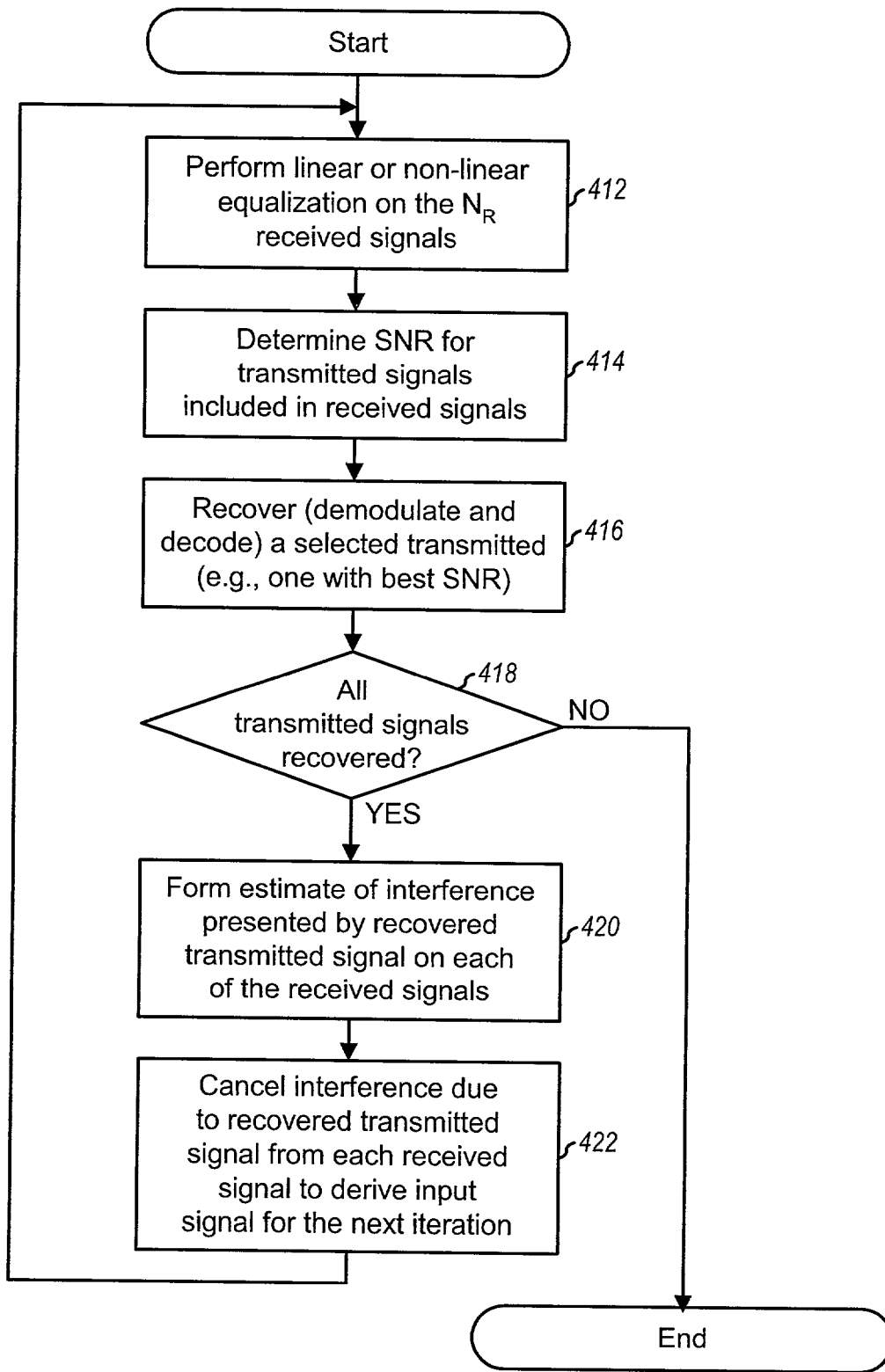


FIG. 4

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