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(54) **USING CONVOLUTIONAL DECODING TO IMPROVE TIME DELAY AND PHASE ESTIMATION IN DIGITAL COMMUNICATIONS**

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(52) **U.S. Cl.** ..... **375/341; 375/150**

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See application file for complete search history.

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(57) **ABSTRACT**

The time delay and/or phase of a communication signal received by a digital communication receiver can be estimated based on a convolutional decoding operation that the communication receiver performs on the received communication signal. If the original transmitted communication signal has been spread according to a spreading operation, a corresponding despreading operation can be integrated into the convolutional decoding operation.

**24 Claims, 11 Drawing Sheets**

