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(12) **United States Patent**  
**Jin et al.**

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(54) **SERIAL CONCATENATION OF INTERLEAVED CONVOLUTIONAL CODES FORMING TURBO-LIKE CODES**

(58) **Field of Classification Search** ..... 375/240, 375/240.24, 254, 285, 295, 296, 260; 714/755, 714/758, 800, 801, 804, 805  
See application file for complete search history.

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(73) Assignee: **California Institute of Technology**, Pasadena, CA (US)

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(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **13/073,947**

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(65) **Prior Publication Data**

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**Related U.S. Application Data**

(63) Continuation of application No. 12/165,606, filed on Jun. 30, 2008, now Pat. No. 7,916,781, which is a continuation of application No. 11/542,950, filed on Oct. 3, 2006, now Pat. No. 7,421,032, which is a continuation of application No. 09/861,102, filed on May 18, 2001, now Pat. No. 7,116,710, which is a continuation-in-part of application No. 09/922,852, filed on Aug. 18, 2000, now Pat. No. 7,089,477.

(60) Provisional application No. 60/205,095, filed on May 18, 2000.

(51) **Int. Cl.**  
**H04B 1/66** (2006.01)

(52) **U.S. Cl.** ..... 375/240; 375/285; 375/296; 714/801; 714/804

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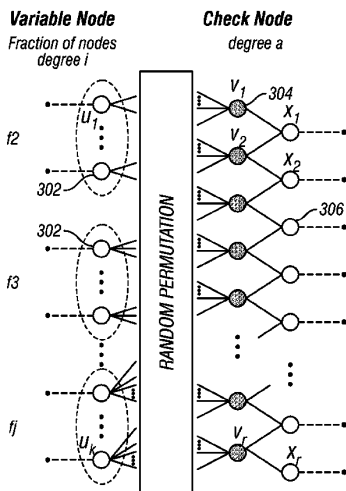
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(57) **ABSTRACT**

A serial concatenated coder includes an outer coder and an inner coder. The outer coder irregularly repeats bits in a data block according to a degree profile and scrambles the repeated bits. The scrambled and repeated bits are input to an inner coder, which has a rate substantially close to one.

**14 Claims, 5 Drawing Sheets**



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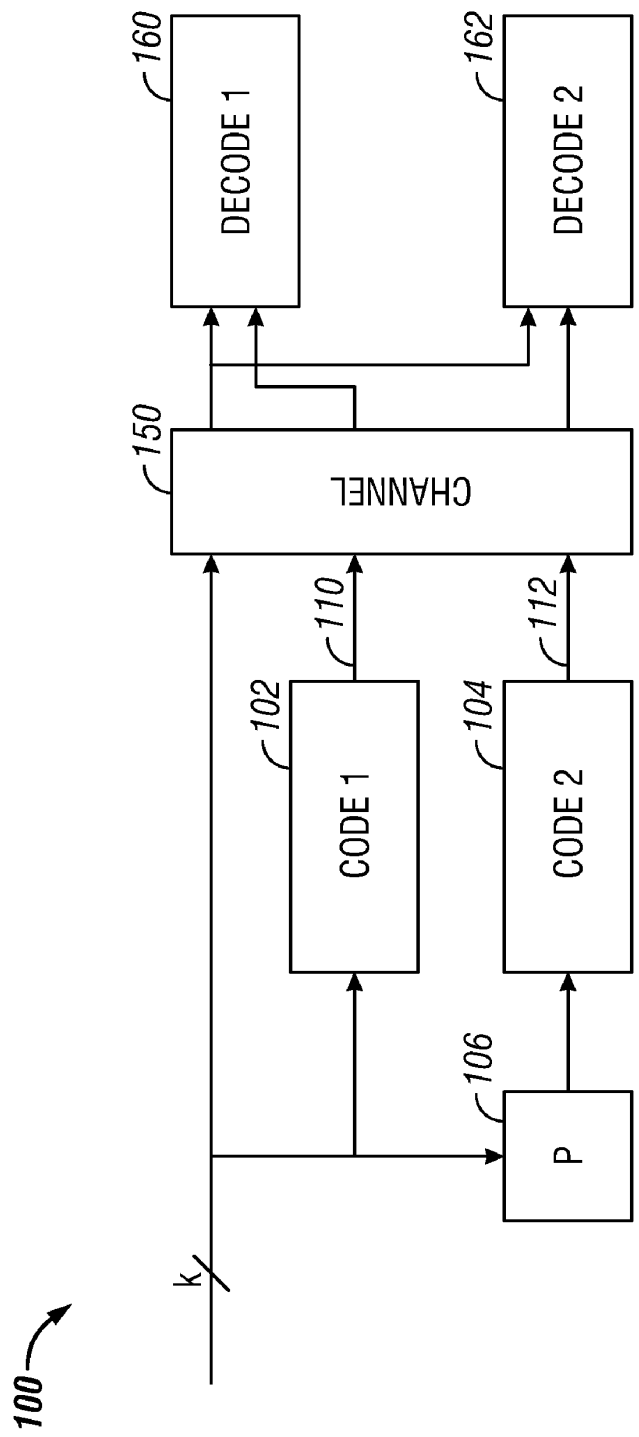
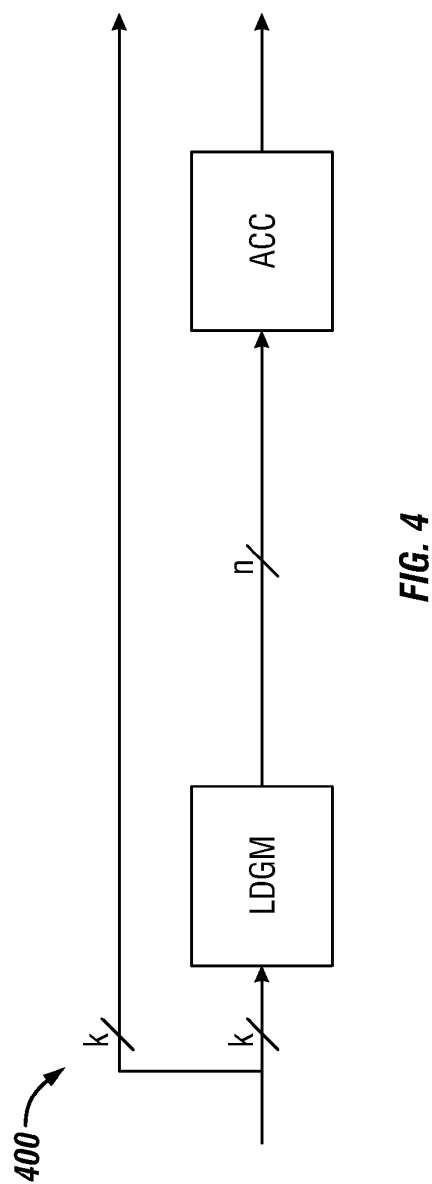
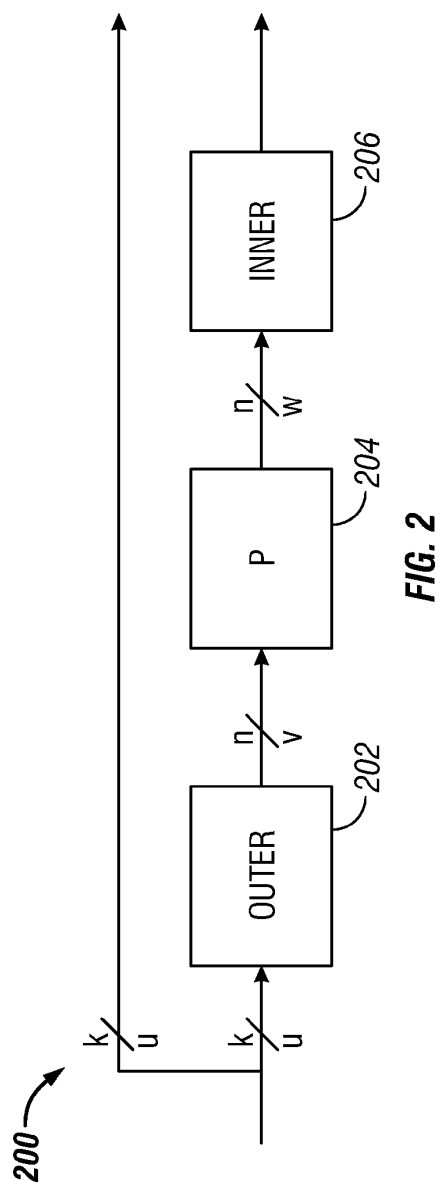


FIG. 1  
(Prior Art)



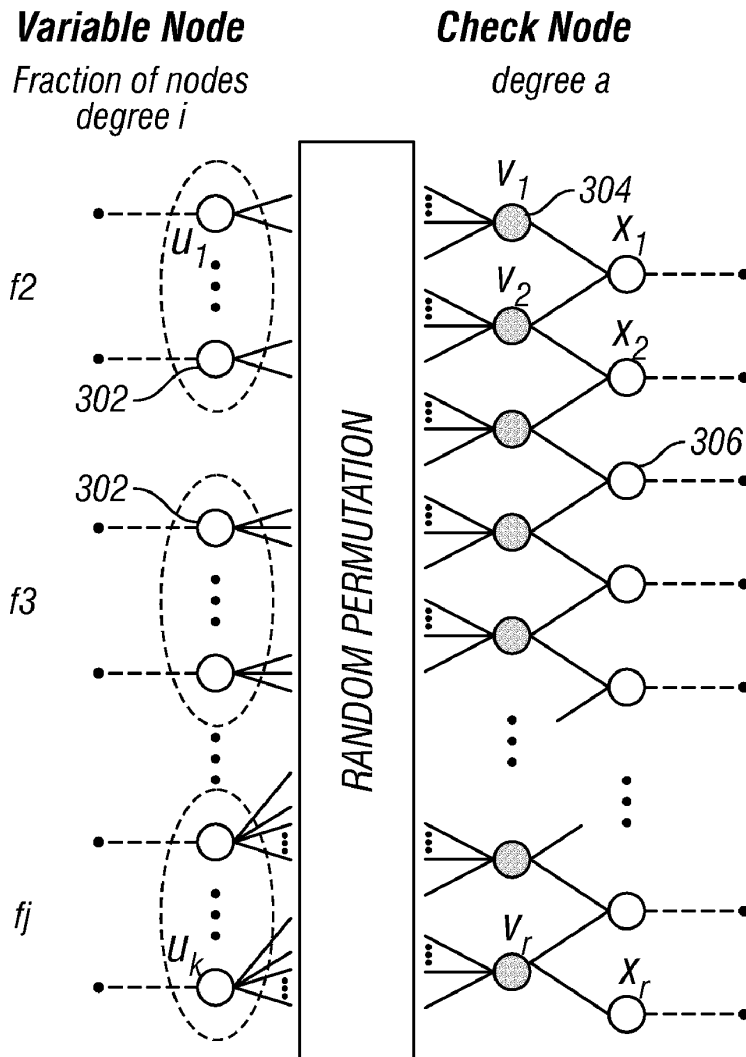


FIG. 3

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