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**KANG et al.**(10) **Pub. No.: US 2022/0368352 A1**(43) **Pub. Date: Nov. 17, 2022**(54) **APPARATUS AND METHOD FOR  
PARALLEL REED-SOLOMON ENCODING**(52) **U.S. Cl.**  
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(2013.01); **H03M 13/1595** (2013.01)(71) Applicant: **ELECTRONICS AND  
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(KR)(57) **ABSTRACT**(72) Inventors: **Hun Sik KANG**, Daejeon (KR);  
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Provided are an apparatus and method for parallel Reed-Solomon (RS) encoding. A parallel RS encoding apparatus includes a coefficient generator configured to calculate a parity symbol matrix and group coefficients of each row or each column of the parity symbol matrix to correspond to the number of parallel paths, a data delayer configured to delay a parallel input information symbol block including symbols of the number of parallel paths so that calculation of a parity symbol is processed in order, a parity symbol calculator configured to calculate, based on the grouped coefficients outputted from the coefficient generator and the parallel input information symbol block delayed by the data delayer, the parity symbol, and a parallel outputter configured to output a codeword generated based on the parity symbol outputted from the parity symbol calculator and the parallel input information symbol block delayed by the data delayer.

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