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(19) **United States**(12) **Patent Application Publication**
WANG et al.(10) **Pub. No.: US 2024/0178852 A1**(43) **Pub. Date: May 30, 2024**(54) **PIPELINE ANALOG-TO-DIGITAL
CONVERTER AND CALIBRATION METHOD
THEREOF**(52) **U.S. Cl.**
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H03M 1/10 (2006.01)(57) **ABSTRACT**

A calibration method of a pipeline analog-to-digital converter (ADC) that includes a residue amplifier includes the following steps: (A) generating an offset voltage; (B) adjusting a first input voltage of the residue amplifier according to the offset voltage and a reference digital code; (C) converting an output voltage of the residue amplifier into a second digital code; (D) performing a correlation operation on the reference digital code and the second digital code to generate an intermediate gain; (E) recording the intermediate gain; (F) repeating step (A) to step (E) to record a plurality of intermediate gains; (G) selecting one of the intermediate gains as a digital gain according to the second digital code; and (H) generating an output digital code according to a first digital code, the reference digital code, the digital gain, and the second digital code.

