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## A digital signal processing system of digital Rogowski current transducer with comb filter

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In ITER poloidal field (PF) prototype converter testing, the Rogowski current transducer is used to measure the current in a DC bus bar. When thyristors, which are parts of PF converter, are triggered on, they will produce electromagnetic noise around. The noise signal, which has a strong amplitude and fixed frequency, is easy to be coupled by cable between Rogowski coil and integrator, and transmitted to integrator. Then, the differential signal, which is produced by Rogowski coil and proportional to the current in DC bus bar, will be submerged. Consequently, it will lead to a very low signal-noise ratio, and the integrator cannot work. A digital signal processing system has been designed to solve the problem mentioned above. The design is based on the dual-ADC structure digital integrator which has been developed at ASIPP. A digital comb filter is utilized to filter out the electromagnetic noise signal, and measures are taken to weaken it from the hardware perspective. The experiment indicates that the method presented in this paper can decrease the amplitude of electromagnetic noise, increase the signal-noise ratio and improve the measurement accuracy.

## Eligible for student paper award?

No

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