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A simple frequency sweep linearization method for FM density profile reflectometry ADI LIU, JIANQIANG HU, University of Science and Technology of China, EDWARD DOYLE, University of California, Los Angeles, JIN ZHANG, HONG LI, CHU ZHOU, XIAOHUI ZHANG, MINGYUAN WANG, TAO LAN, JINGLIN XIE, WANDONG LIU, CHANGXUAN YU, University of Science and Technology of China — Frequency modulated, continuous wave (FMCW) reflectometry is widely used to measure the electron density profile on fusion devices. To ensure the output intermediate frequency signal is proportional to the propagation delay time, the frequency sweep should be linearized, especially for reflectometry with sweeping periods of only a few microseconds. We introduce a simple dynamic calibration technique to linearize the frequency sweep based on digital complex demodulation methods, without using a Fourier transform, which would induce a trade-off between frequency and time resolution. The technique is convenient as it can be done in the same conditions as for plasma measurements. The method is in use on the EAST profile reflectometer, and results will be presented.

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