

Development of the ion cyclotron emission diagnostic on HL-2A tokamak

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Abstract: An ion cyclotron emission (ICE) diagnostic, which is based on B-dot probe, has been recently designed and developed on HL-2A tokamak. The diagnostic will be used to study various high-frequency magnetic field fluctuations which can be excited by energetic ions^[1,2] and runaway electrons^[3,4] in the plasma. The ICE diagnostic includes high-frequency B-dot probes, direct current blockers, radio frequency splitters, filter bank and power detectors. The filter bank is composed of 16 channel filters, the center frequency covers from 10 to 160 MHz with 10MHz step length and 8MHz bandwidth. Besides, the signal can be sampled with a four-channel fast analog-to-digital converter with 14 bit depth and 250 MSample/s sampling rate.

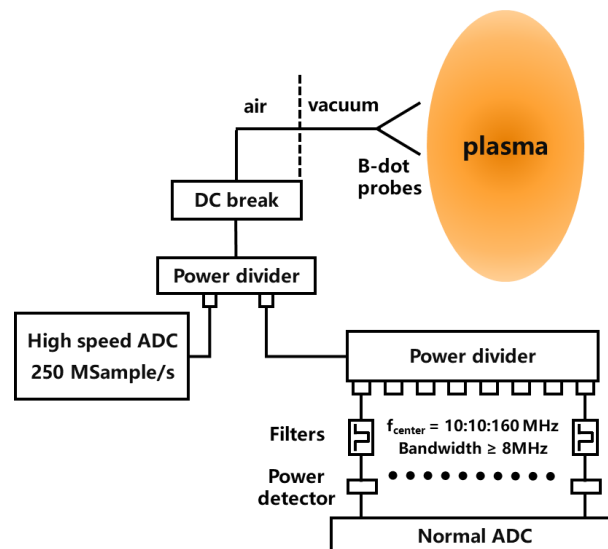


Figure 1. Diagram of the ICE diagnostic.

References

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