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Theory Experiment

On the Identification of Interferometer Signals in High-k Scattering Data* R. Nazikian, *PPPL* — High-k scattering is a technique used on multiple devices to diagnose short scale (order of the ion gyroradius) density fluctuations with good spatial resolution. In the last decade the method has been used to try to identify short radial scale Kinetic Alfvén Waves (KAWs) that are theoretically predicted to couple to large scale Alfvén eigenmodes such as TAEs and RSAEs. The importance of these KAWs is that they contribute an important dissipation mechanism for Alfvénic instabilities. However, the use of high-k scattering is problematic for the interpretation of the KAW because even a small level of stray radiation from the beam can produce an interferometric signal that can be mistaken for high-k scattering. This talk discusses several methods that can be used to identify the interferometer effect based on properties of the complex amplitude of the received signal. Data will be used from DIII-D and NSTX to illustrate the method.

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