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Methods For Analyzing Temperature Pertubations From Pulsed Heating[1] J.M. NELSON, MIT, J.C. DEBOO, T.C. LUCE, C.C. PETTY, GA, J. PINO, CalTech — Heat transport by electrons in tokamak plasmas is currently a subject of intense study. Transport analysis using power balance analysis does not allow one to separate heat convection and conduction, but this can be accomplished using the dynamic response of the electon temperature from periodic heat pulses. The plasma response is analyzed using the linearized Braginski equation. On the DIII-D tokamak, localized electron cyclotron heating (ECH) is used to generate a train of heat pulses which is monitored using electron cyclotron emission. Two different methods have been implemented for the analysis of periodic temperatue perturbations: the fast Fourier transform (FFT) and a Fourier series using the modulation frequency of the ECH and its harmonics. The Fourier series technique holds promise for smaller uncertainty estimates. The expected dependance of the temperatue perturbations in space and time has also been studied using numerical simulations of the heat pulses in realistic toroidal geometry. The results of the simulations will be compared to experimental measurements to determine the salient features of the model.

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☐ Prefer Oral Session
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