

# **Broad wavenumber turbulence measurements during neutral beam injection on the DIII-D Tokamak**

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**Abstract.** Density fluctuation measurements covering a wavenumber range relevant to ITG, TEM and ETG type instabilities ( $k_{\perp}\rho_i \approx 0.2 \rightarrow 10$ ) are compared during Ohmic and neutral beam injection (NBI). These short time duration NBI perturbations modified the background temperature as well as the density fluctuation behavior but had little effect on the background density. It is found that both the measured and calculated response to these perturbations varied with wavenumber supporting the need for broad wavenumber comparisons. The measured fluctuation changes and calculated growth (from the linear gyrokinetic code GKS) show qualitative similarities to each other at low and intermediate- $k$  while the comparison at high- $k$  is inconclusive.

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