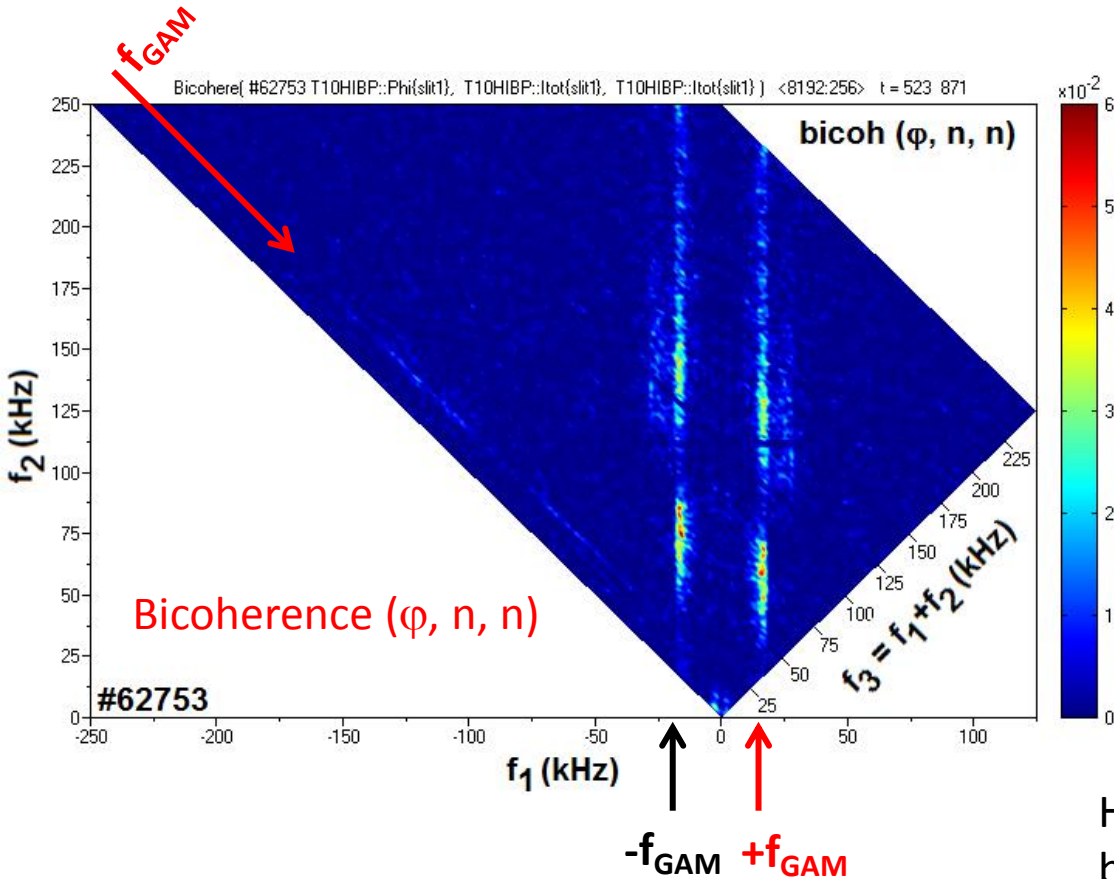
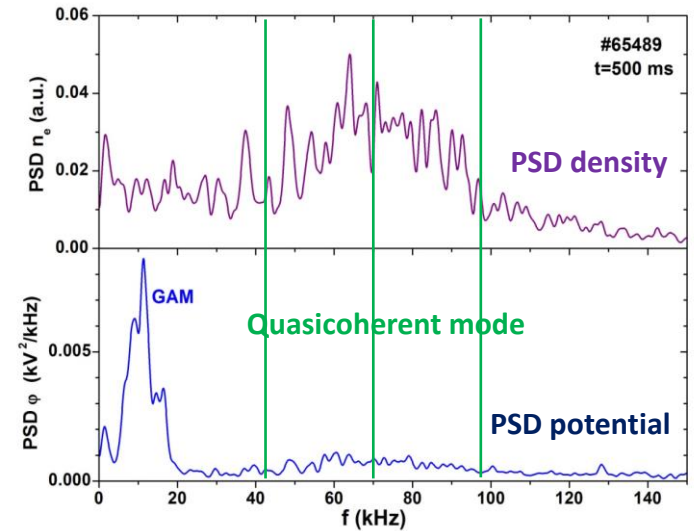


Study of interactions between GAMs and broadband turbulence in the T-10 tokamak

EX/P8-34



Heavy Ion Beam probe (HIBP) signals power spectra in the core plasma ($r/a=0.8$)



HIBP data shows that GAM is linked with broadband turbulence (<250 kHz = f_N) in plasma potential, density and B_{pol} via three-wave coupling:

$$f_1 = f_2 \pm f_{GAM},$$

suggesting quadratic nonlinear interaction like Reynolds Stress

$$b_{\varphi, n, n}^2(f_1, f_2) = \frac{\left| \left\langle \Phi_{\varphi}(f_1) \cdot \Phi_n(f_2) \cdot \Phi_n(f_1 + f_2)^* \right\rangle \right|^2}{\left\langle \left| \Phi_{\varphi}(f_1) \cdot \Phi_n(f_2) \right|^2 \right\rangle \cdot \left\langle \left| \Phi_n(f_1 + f_2) \right|^2 \right\rangle}$$

Statistically valuable bicoherence at the GAM frequency f_{GAM} was found for (φ, n, n) , (n, n, n) , (n, n, B_{pol}) for $r/a > 0.7$.