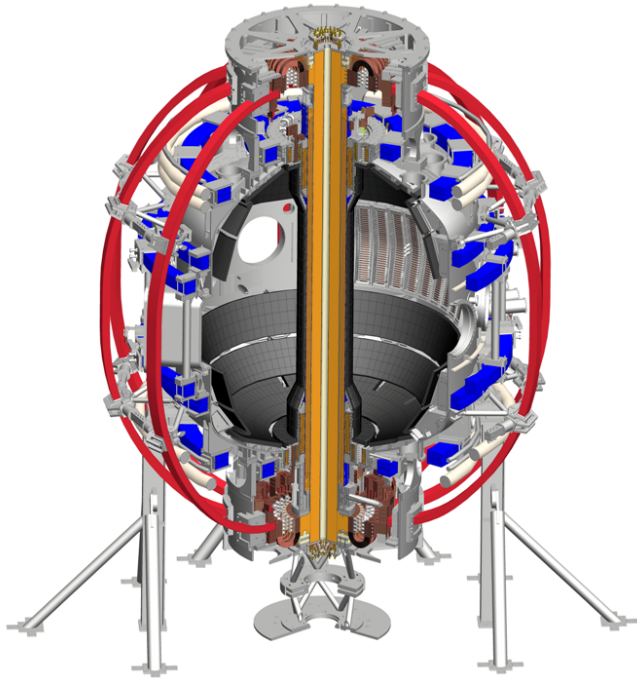




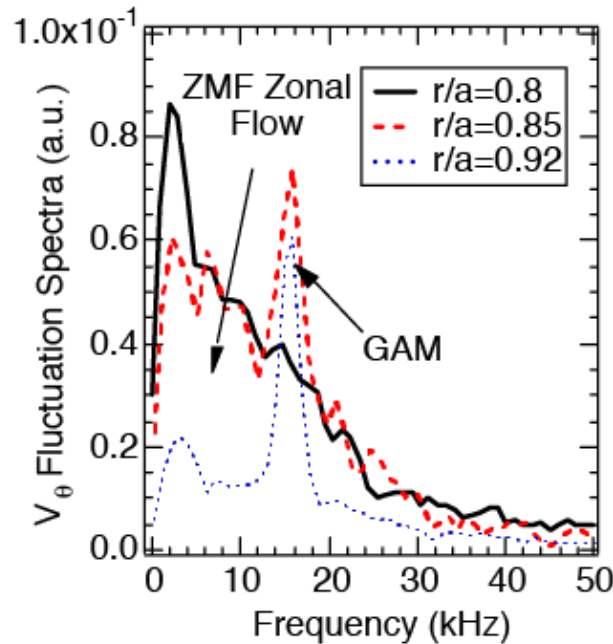
# 2D observations of GAM and zero-frequency zonal flows



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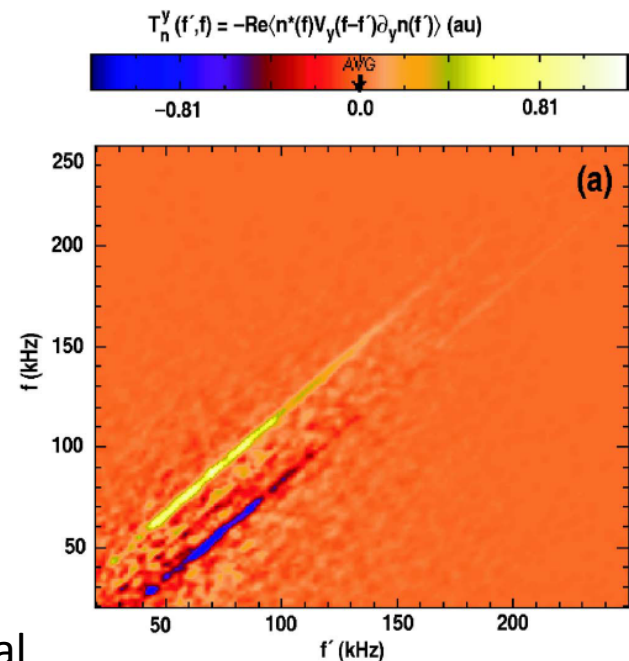
# 2D observations of GAM and zero-frequency zonal flows

- Plasma turbulence self-regulates through zonal flow (ZF) generation
- 2D BES system on DIII-D shows zero-mean-frequency (ZMF) ZFs in the near-pedestal region ( $r/a \sim 0.8$ ) and GAM ZFs in the pedestal ( $r/a \sim 0.95$ )

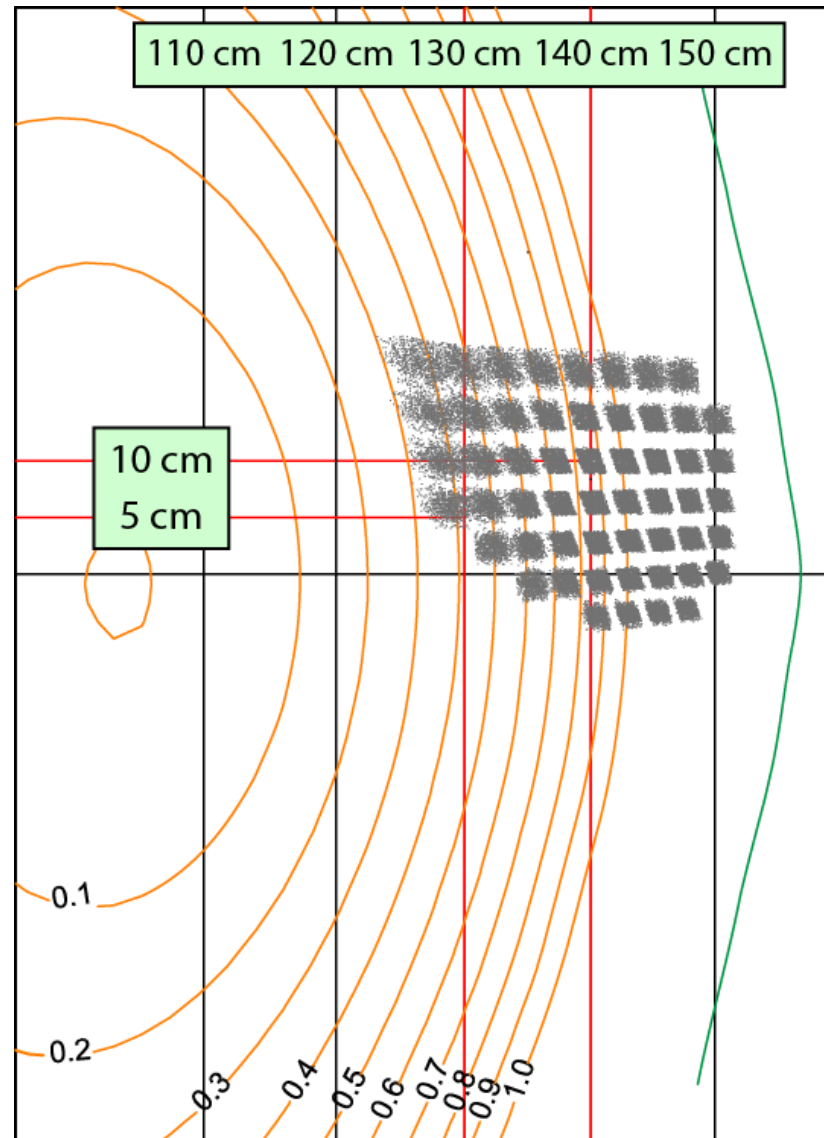


DIII-D BES,  
G. McKee et al

Nonlinear energy transfer



# 2D BES on NSTX-U covers outer plasma and pedestal



# 2D observations of GAM and zero-frequency zonal flows

- Objective: document ZFs and expected ZF dependences with new 2D imaging capabilities by the NSTX-U BES system
- Experimental plan
  - q scan because GAM ZFs preferentially occur at high q
  - Pnb scan because the GAM frequency scales with temperature
  - Extend L-mode phase (inner-wall limited, USN operation, or HFS fueling) because ZFs are best observed in L-mode with large amplitude turbulence
  - Target low  $I_p$  scenarios to avoid MHD activity
- Addresses R15-1 for H-mode confinement variation with  $I_p$  and Pnb