Advances in stellarator gyrokinetics

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- New results from analytical theory and simulations with two codes:
  - EUTERPE (full-volume but here linear)
  - GENE (full flux-surface, but radially local and nonlinear)

- ITG turbulence (Boltzmann electrons):
  - distribution of fluctuations very different from tokamaks
  - transport is comparable (so far), but more sensitive to $\rho^*$

- Trapped-electron modes
  - more stable in stellarators where trapping regions have good magnetic curvature (maximum-J configurations)
  - expected to result in less turbulence and transport when the density gradient is large

![Nonlinear potential fluctuations in ITG turbulence in W7-X (GENE)](image1)

![Growth rates of fastest growing modes vs density and temperature gradient in W7-X and DIII-D (GENE)](image2)