Two sets of MHD simulations are presented in which resonant magnetic perturbation (RMP) vacuum fields are imposed on DIII-D equilibria.

**Three simulations with DIII-D shot 113317** (NIMROD code is used for all simulations)

- Not an RMP experimental discharge
- Measured density and temperature profiles
- Three artificially imposed rotation profile
- 3 kA even parity I-coil currents
- Measured error fields + 1 kA C-coil currents
- \( S = t_{e,0} / t_{e,0} = 3 \times 10^9 \)

**Four simulations with DIII-D shot 119690**

- Low collisionality odd parity I-coil experiment
- \( \Psi = \Delta + \Delta^{-} = \Psi \)

**Comparison of simulations with cylindrical error field theory**

- Theory does not include any toroidal effects such as mode coupling, hence the comparison can give some insight into the importance of realistic geometry

**Experimental Profiles**

- \( \Psi_{R} \) and \( \Psi_{P} \) for 113317
- \( \Psi_{R} \) and \( \Psi_{P} \) for 119690

**Conclusions**

- NIMROD simulations of DIII-D plasmas with RMP fields show:
  - Increased screening of vacuum fields with increased edge rotation
  - \( \omega_{e} \) convection near the separatrix can pump particles into the vacuum region
  - A reduction of \( \omega_{e} \) convection cell velocity with: increased edge rotation, decreased resistivity, decreased resonant mode amplitude (odd parity I-coils)
  - Compared with cylindrical error field theory, more realistic model tends to predict larger resonant mode amplitudes and shows qualitative anomalies likely linked to toroidal mode coupling effects