Predictive transport capabilities and needs

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- Motivated by the successes of predictive modeling, the GLF23 and MM95 models have been incorporated into TRANSP
- What predictive TRANSP can offer to NSTX:
  1. provide physics-based understanding of heat transport
  2. asses effects of ExB shear and impurities
  3. asses RF versus NB heating
  4. extrapolate to NSST, etc
- Interface with research on other tokamaks:
  1. GLF23, MM95, Weiland, etc models are being tested elsewhere
  2. TRANSP has strong capabilities for modeling auxiliary heating
  3. Collaboratory making TRANSP very accessible elsewhere

Present status of predictive TRANSP

- still in debugging phase
  1. improving boundary specification
  2. checking ExB rotation formulation
  3. checking applicability of theory for extreme shaping
- more validations using the same input data needed
  1. comparisons of TRANSP and BALDUR using MM95 are being done
  2. comparisons of TRANSP and XPTOR using GLF23 planned
  3. comparisons of GS2 results for L/T_{crit} and χ in highly shaped plasmas with GLF23 and MM95

More work on predictive TRANSP needed