GOURDON/GEOM Parallelization Progress and Outlook

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Code System

- **Input**
  - Coil Currents
  - Mass Profile

- **GRID**
  - Vac. Field

- **GOURDON**
  - Field lines

- **DESCUR**
  - Fouri. app. LCMS

- **ORBITZ3D**
  - Particle dist.
  - Alpha Loss

- **VMEC**
  - Plasma Equil.

- **GOURDON**
  - Field lines
  - Guiding Centers

- **MFBE**
  - Mag. Field

- **Data**
  - Footprints / Heat Loads

- **GOURDON**
  - Lines/Centers on Plates, Surfaces

- **GEOM**
  - Geometry

- **ORBITZ3D**
  - Plasma Equil.

- **MFBE**
  - Mag. Field

- **Data**
  - Footprints / Heat Loads
GEOM Summary

- Input geometry of Device
- Outputs “Tagged Map”
- Used by GOURDON for speed
- GOURDON calculates intersection
New GOURDON

- Parallelization (mostly) complete
  - Compare important quantities with serial
  - Ran 100 lines

- Ability to trace guiding centers
  - Important if Analytic Heat Load model fails

$$T_{et} \propto L_c^{-4/7}$$

- Calculate intersection points
  - Divertor Plates, FW, LCMS
Benmarcking GOURDON

- Code designed for W7-X

☐ Match LCMS of VMEC?
Plate/FW Intersection

- Check Intersection with Plates/FW
- Distances easily calculated
Summary and Future

- New GOURDON is Ready
  - LCMSs agree(?), Plate/FW Inters. accurate
- Heatloads/Peaking factors from Tracing
  - Understand/implement averaging process
  - Need to use guiding centers?
- Full Test Case
  - Need LCMS, FW, Mag Field
  - Probe Island Structure, begin divertor design