



Field Line Tracing with Diffusion

Alice Koniges

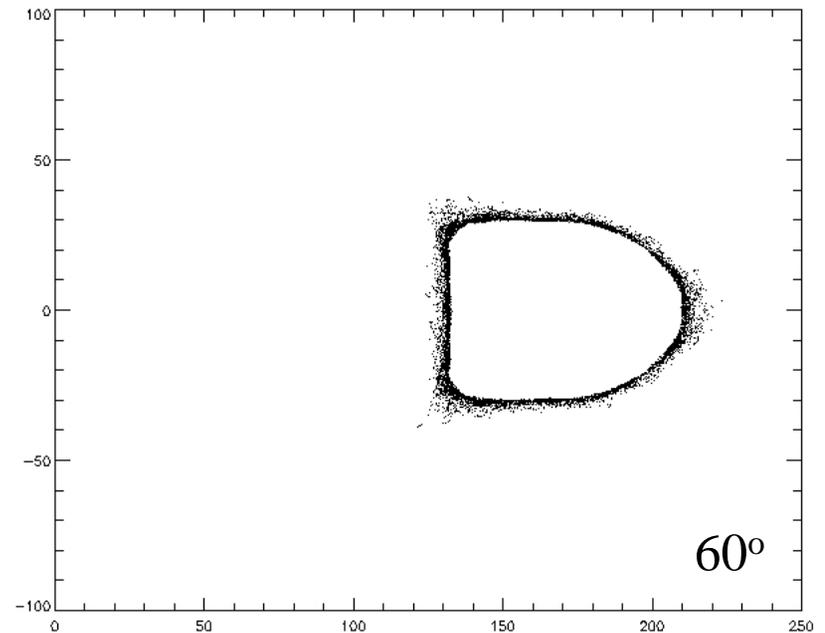
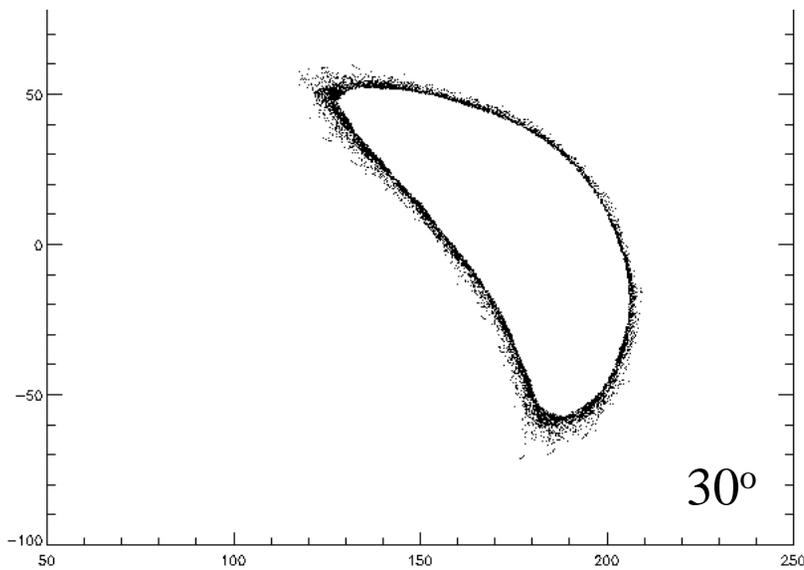
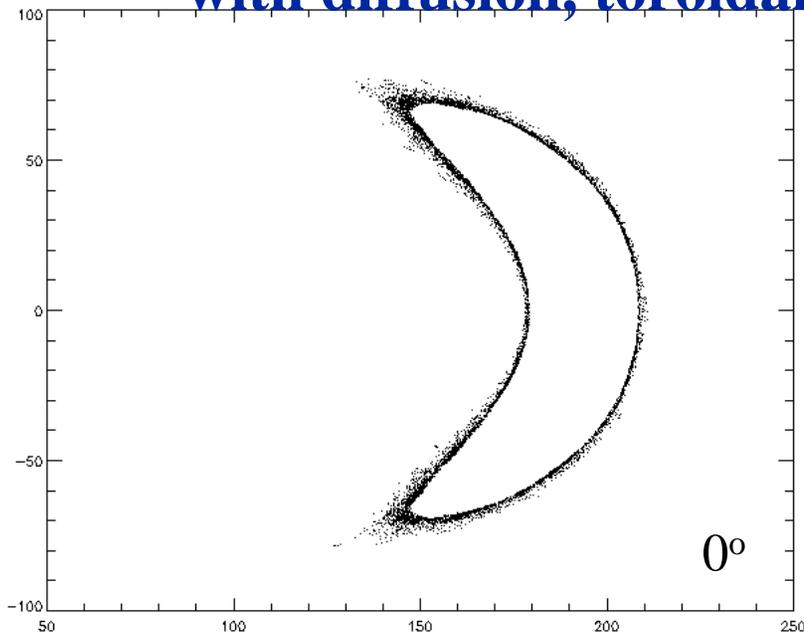
NCSX Project Review

June 12, 2001

- New Gourdon Code variant + Diffusion
- **J. Kisslinger**, IPP-MPG (Garching) is author of Diffusion version
- Input fields and parameters from MFBE & VMEC runs supplied by **A. Grossman**, UCSD, and Ku, PPPL
- Need input fields with higher resolution in toroidal direction to improve these results in future
- Eventually add limiters as in W7X

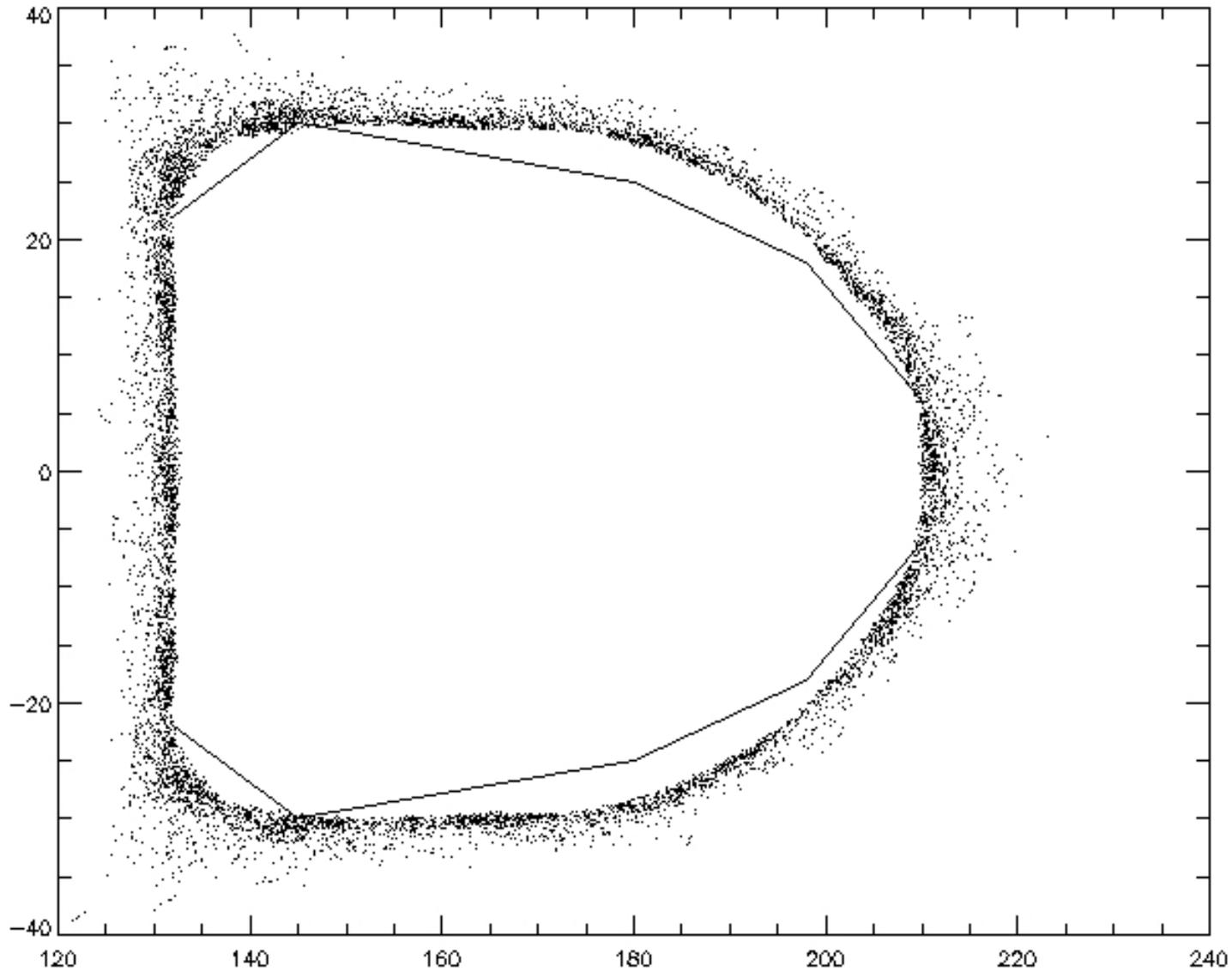
LLNL NCSX Project Personnel: M. Fenstermacher, A. Koniges, T. Rognlien, M. Umansky

Preliminary results: NCSX calculations for field lines with diffusion, toroidal angle = 0, 30, 60

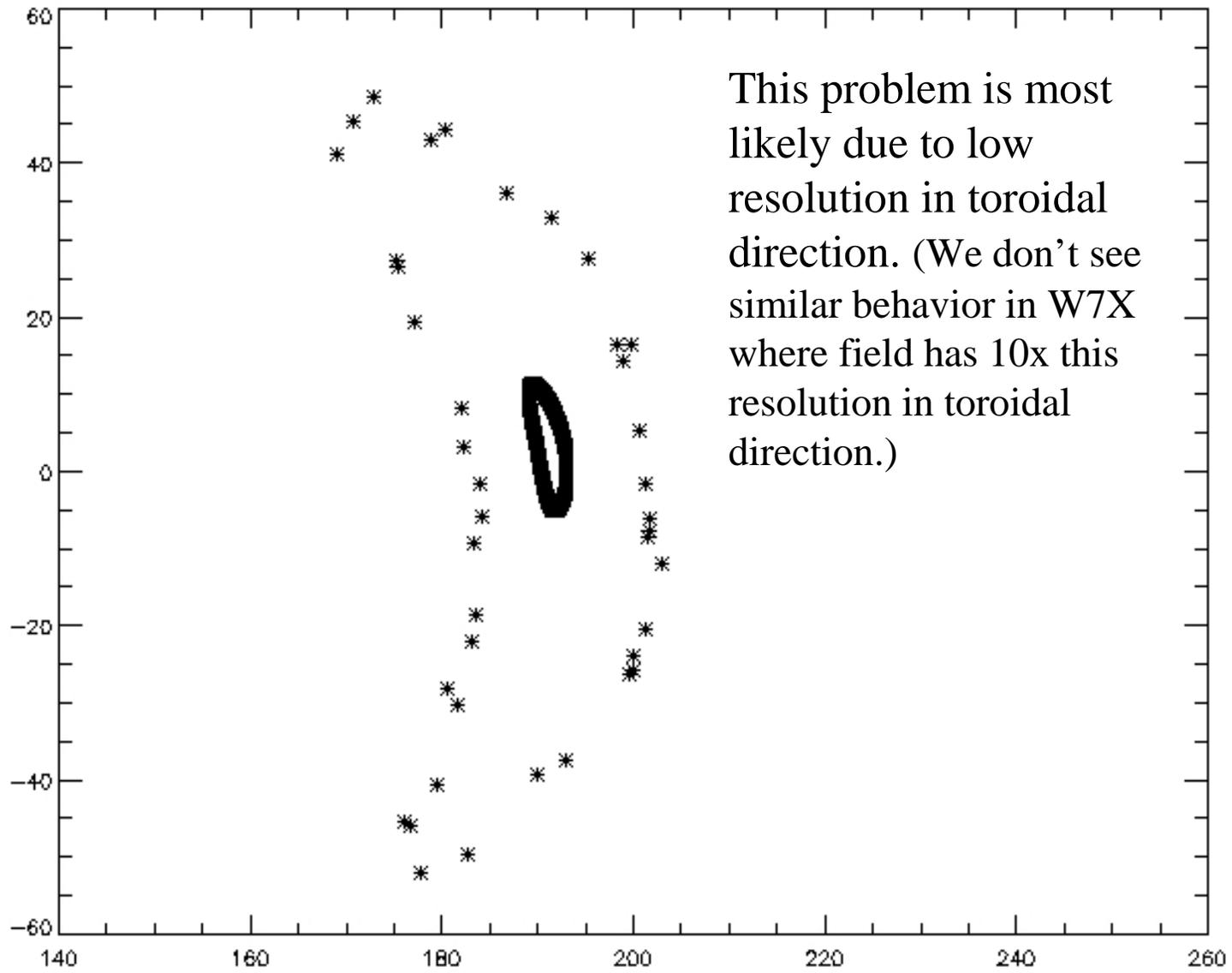


Limiters can be located on outside of surfaces to calculate fluxes and to stop diffusing field lines. This was done for W7X design.

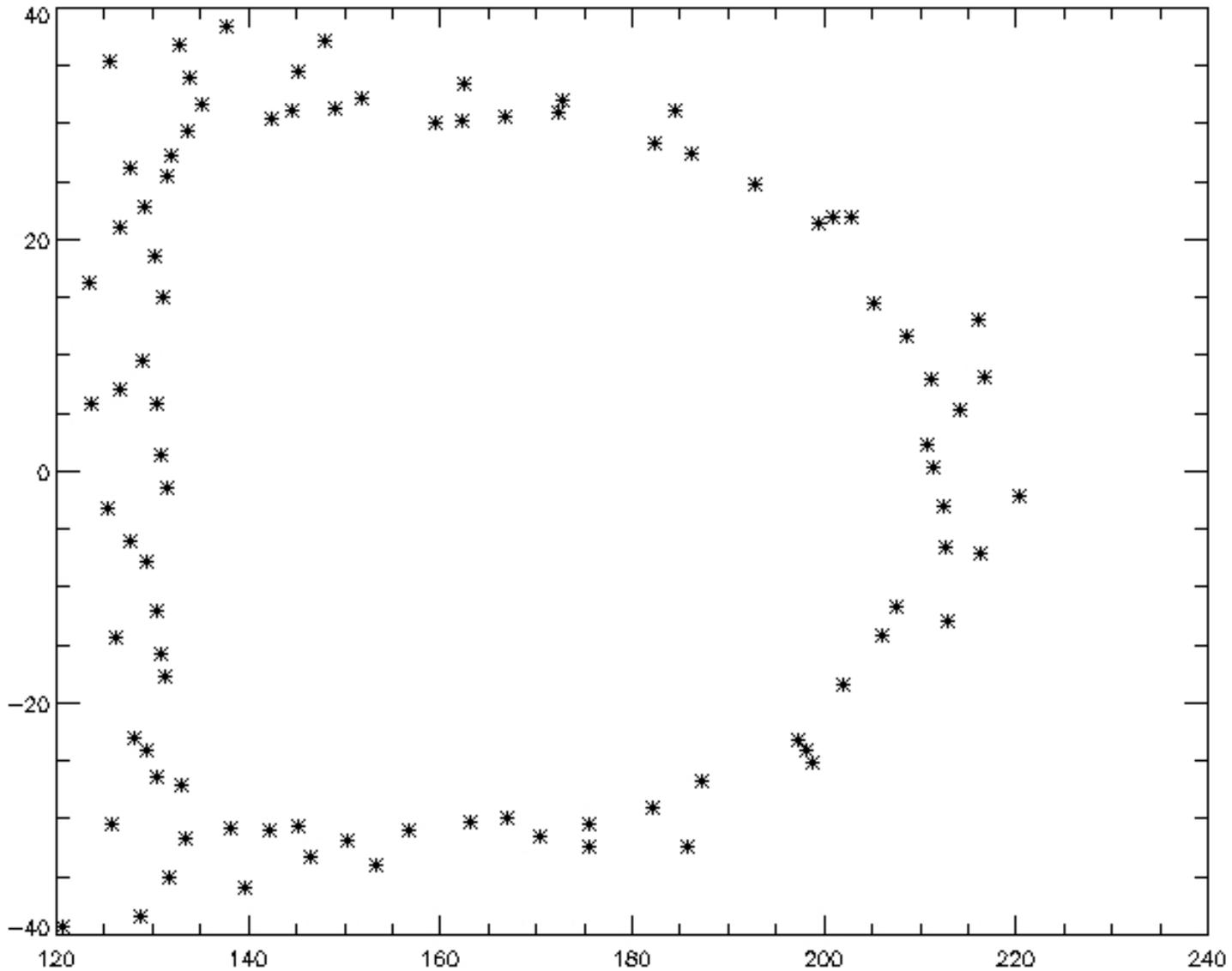
Reflecting targets (solid lines) at ~60 degrees stop diffused field lines from spiraling into center



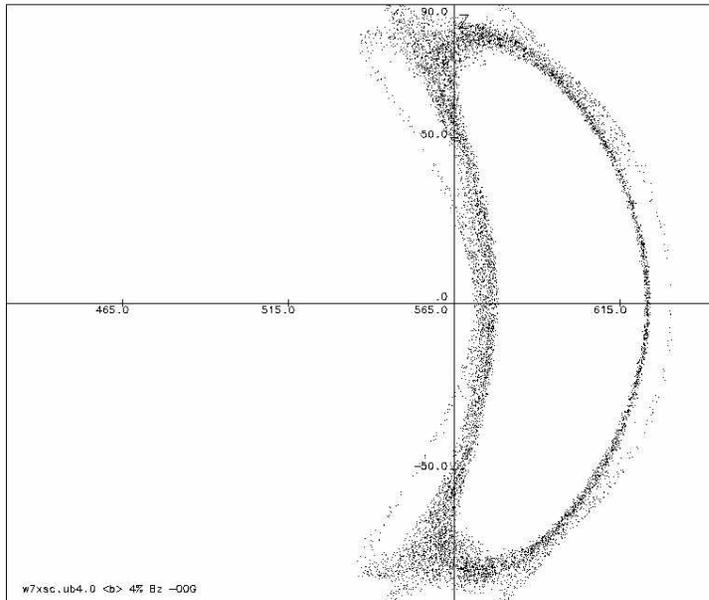
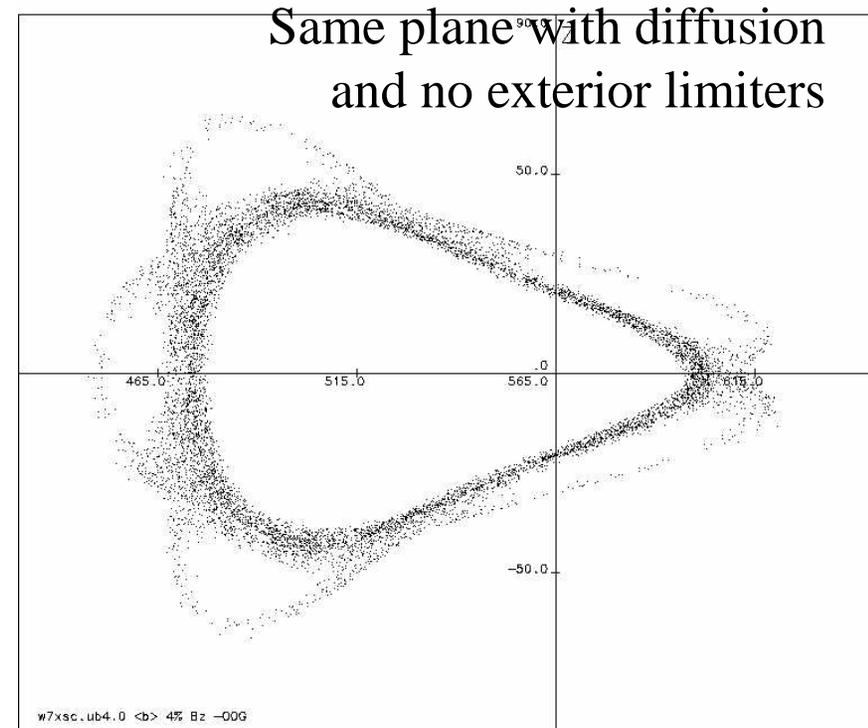
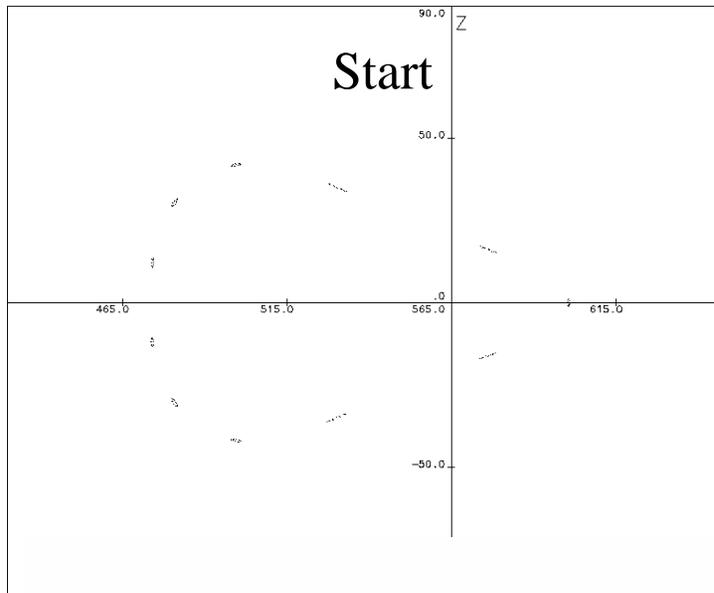
Without reflecting targets, after just a few transits the fields spiral into the center onto an attracting orbit



Starting surface for field lines with diffusion

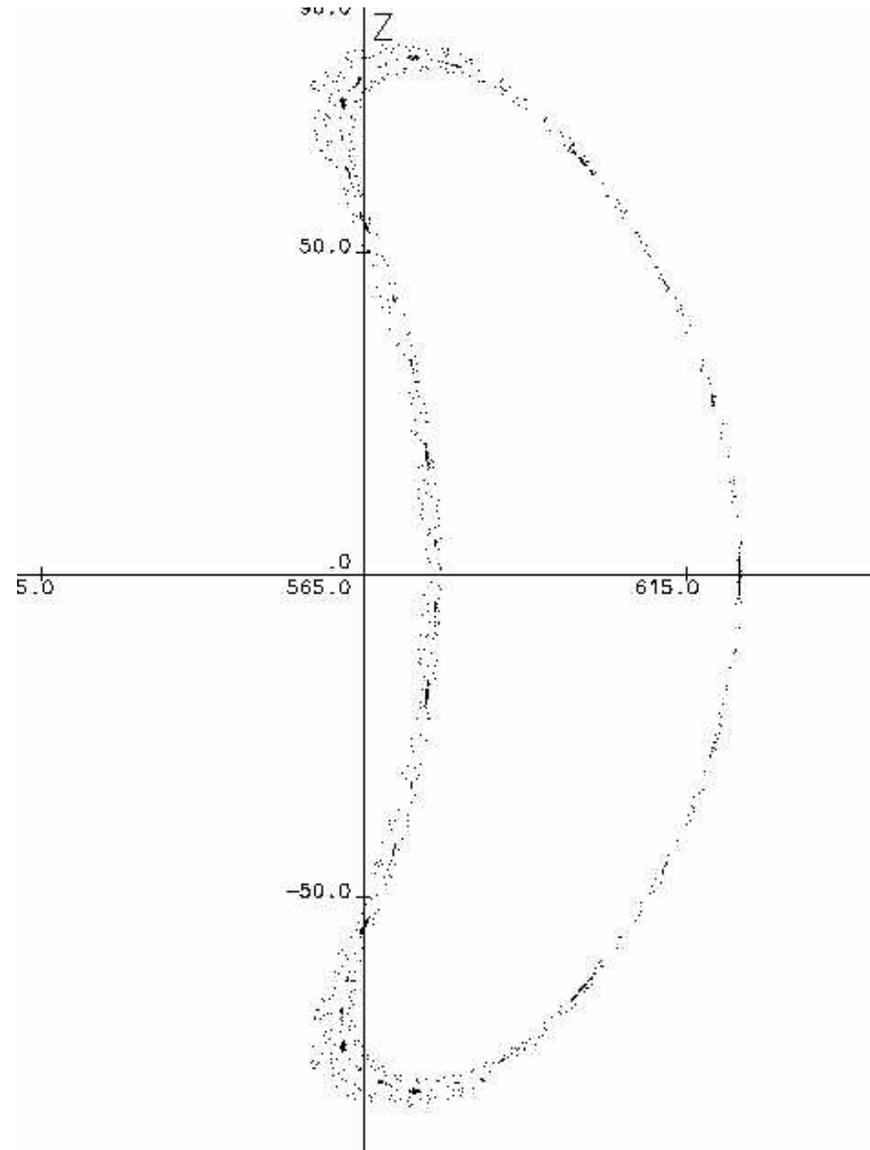


W7X: Effects of Field Line Diffusion

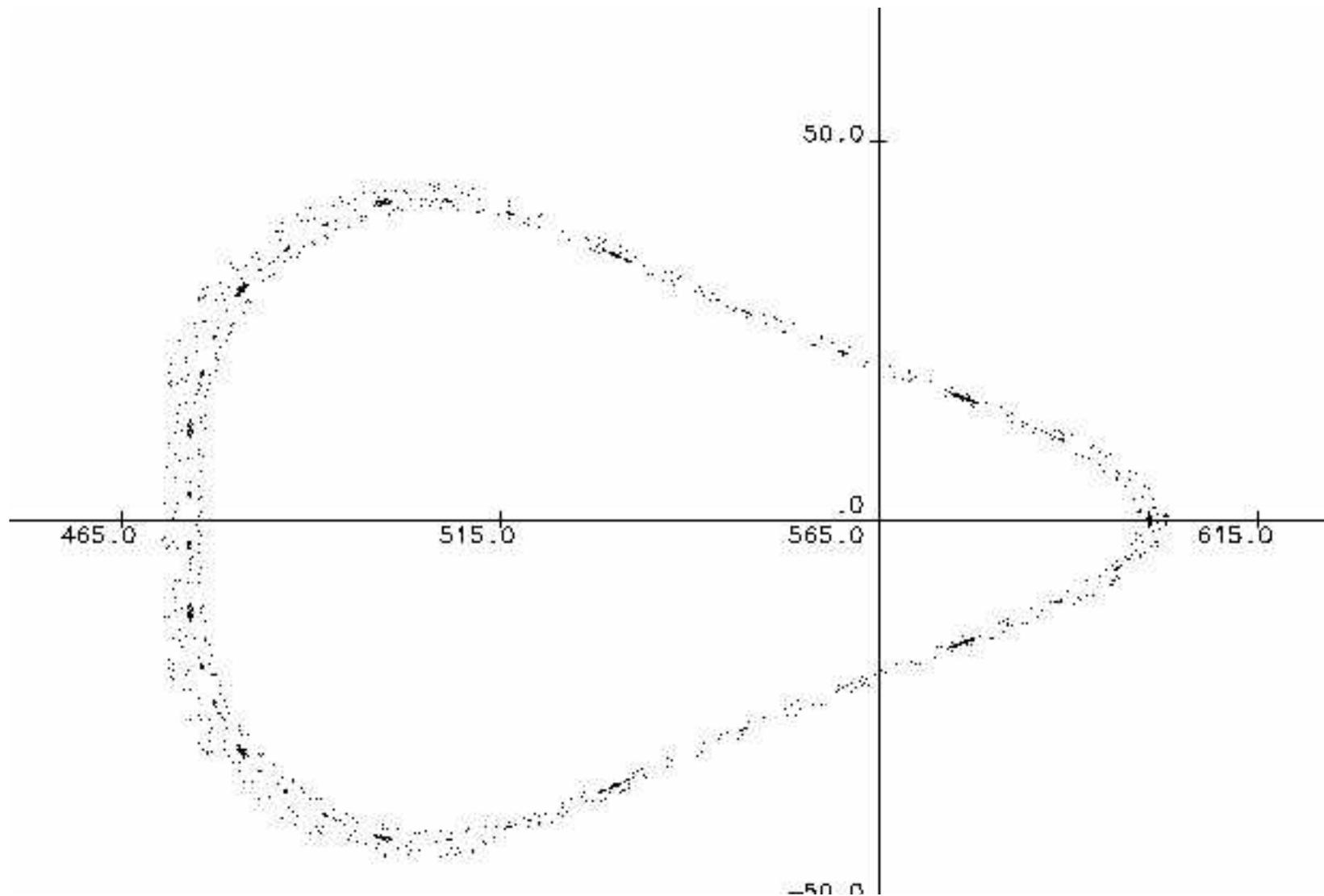


W7X data from Kisslinger at
IPP-GARCHING

Where we are going: W7X with Limiters



W7X with Limiters





LLNL NCSX Project Personnel:

Max Fenstermacher, Alice Koniges, Tom Rognlien, Maxim Umansky

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