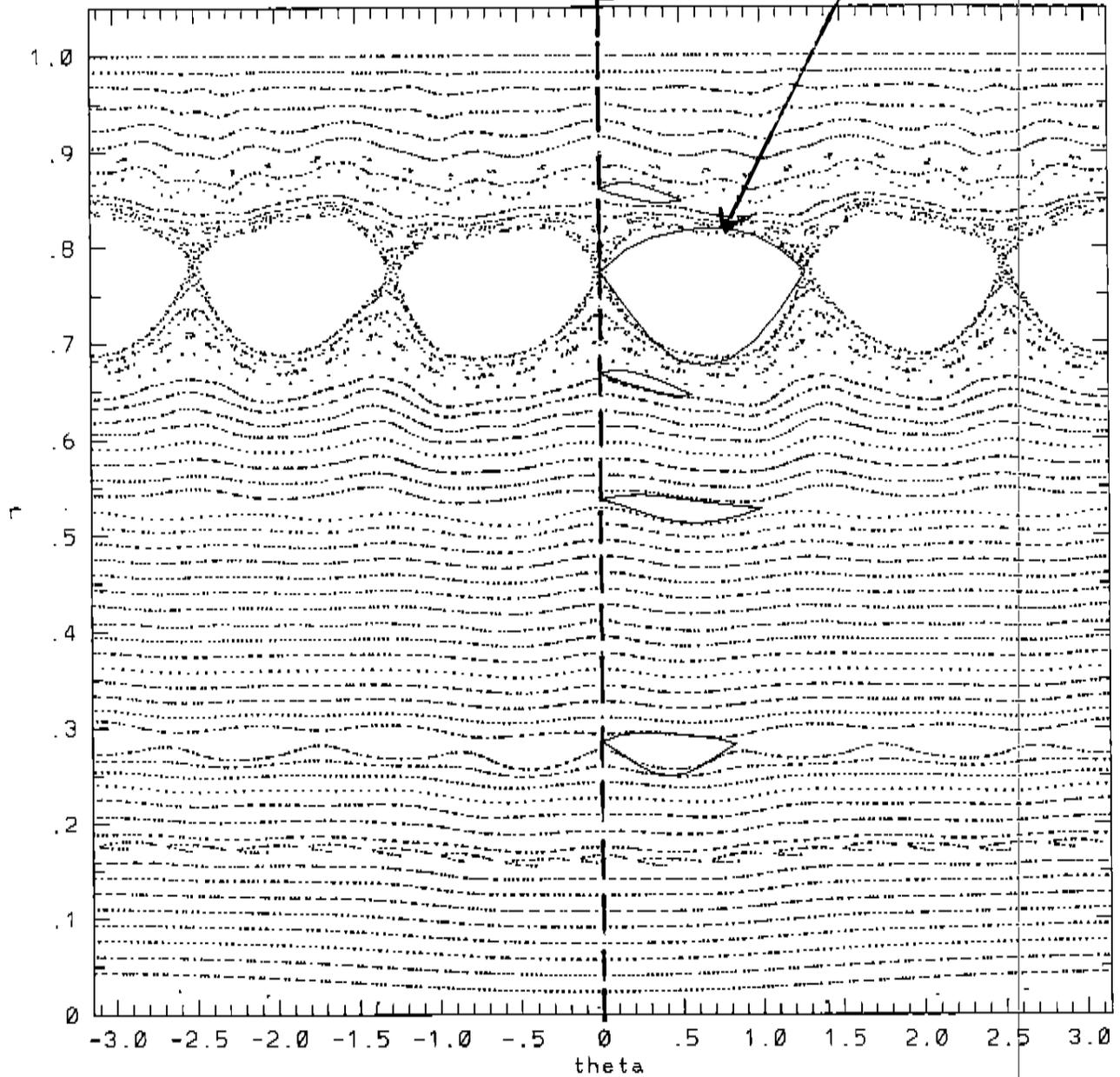


PIES Developments

- Have continued scrutiny and testing of PIES modifications made in the period before the PVR.
 - Bugs reported earlier caused code to crash.
 - Two additional bugs found that cause erratic behavior on some iterations and slow convergence.

Both bugs in implementation of Hudson diagnostic for out-of-phase islands.

Island separatrix
from Hudson
diagnostic.
midplane e_2



it= 60 rpoinc: background coordinates

33

Plot 972

Islands are "out-of-phase".

Diagnosing Out-of-Phase Islands

- Field line following initialized on midplane misses out-of-phase islands.
- Earlier diagnostic for out-of-phase islands had adjustable parameter which required tuning for different types of configurations. Required monitoring. Labor intensive.
- Replacement diagnostic found in late '00 to sometimes give faulty results.
- Hudson diagnostic implemented in early '01 under time pressure for PVR. Subsequent scrutiny has uncovered several bugs in implementation.
 - Failure to reset a flag in island.
 - Error in logic in interfacing with stochastic region outside.
- The bugs have slowed the convergence of the code but have not prevented convergence or affected validity of convergence test.
- Bugs have no effect unless there is a large out-of-phase island.