

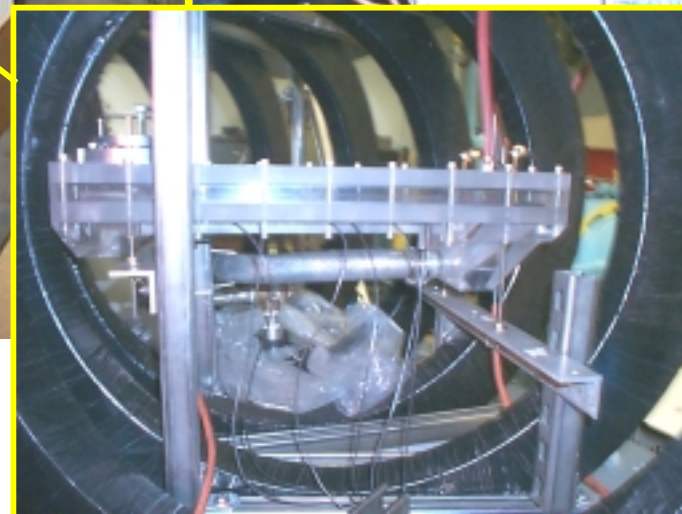
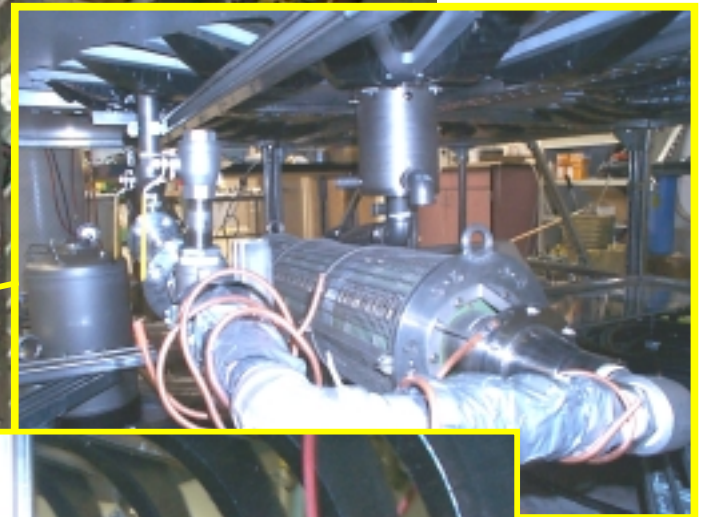
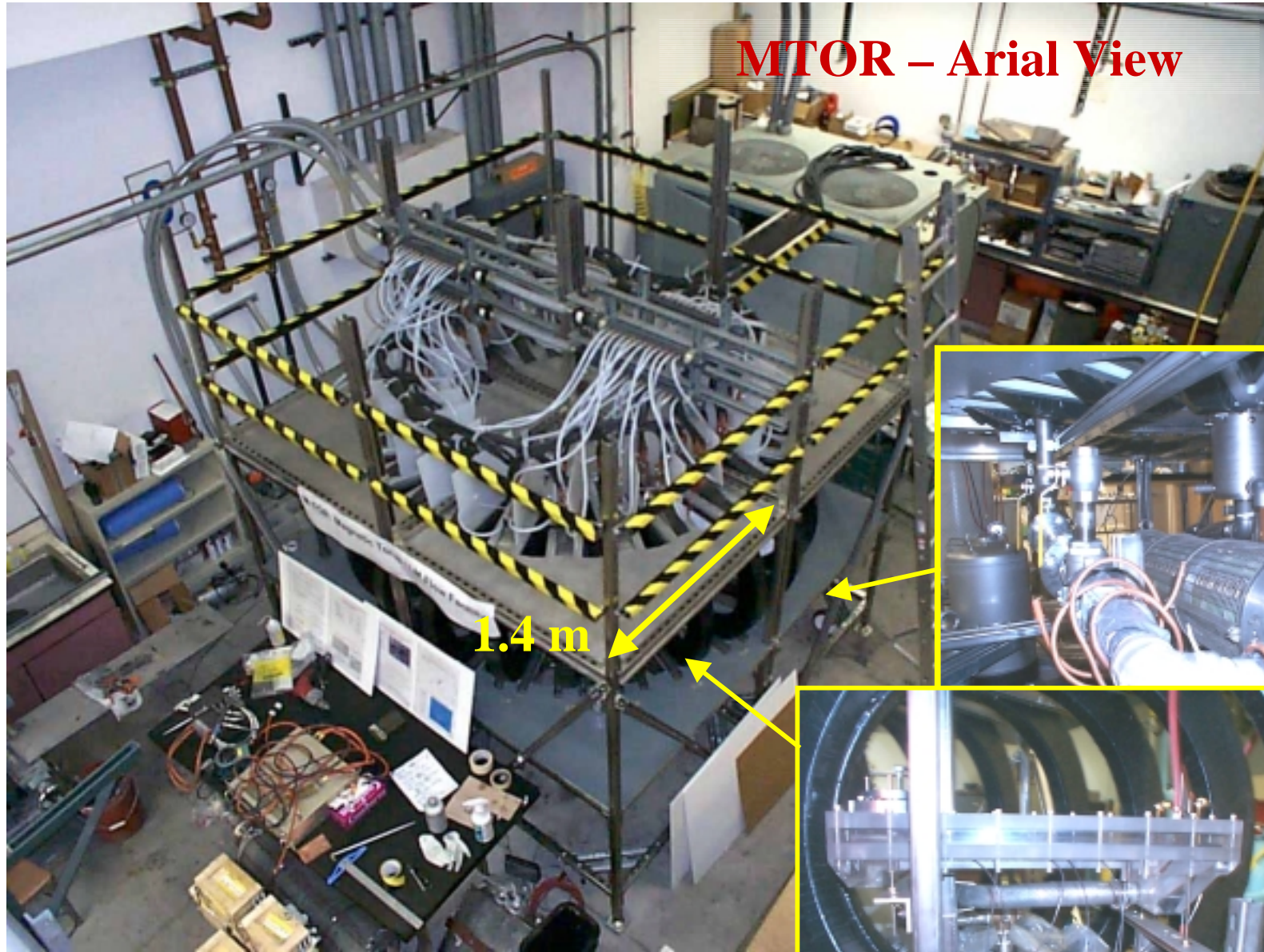
LM-MHD flow experiments on inclined plane



Neil Morley, Jonathan Burris,
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APEX Semi-Annual Meeting
Scottsdale, AZ. November 7-9, 2001

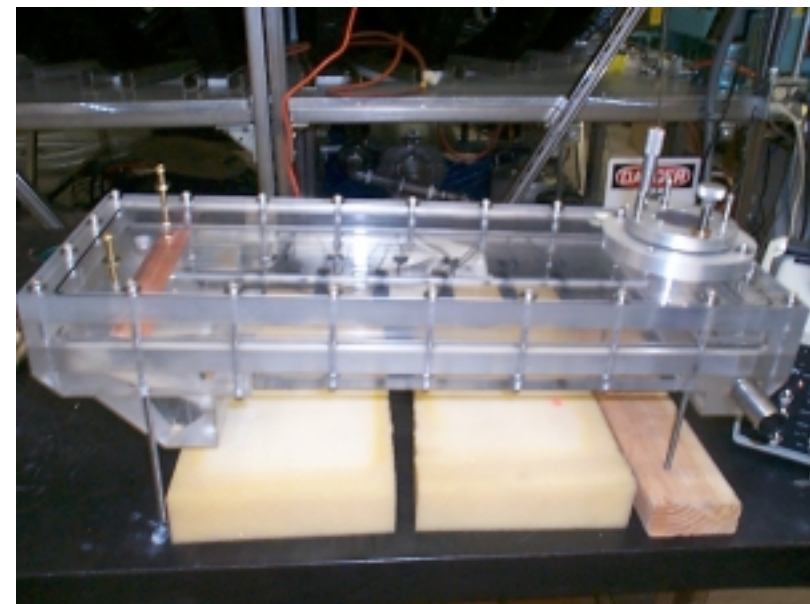
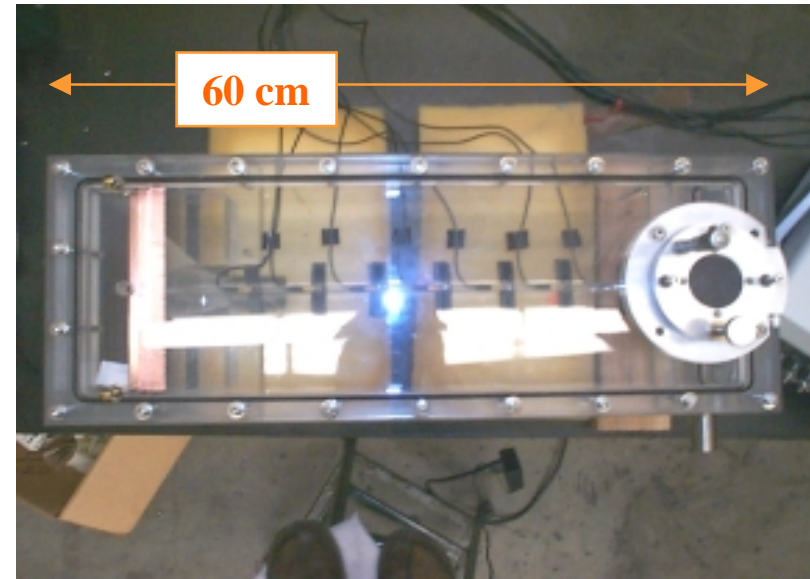
MTOR – Arial View



Inclined Plane Test Section

Features

- Adjustable height nozzle
- Adjustable angle of inclination
- Variable flow widths up to 20 cm
- Applied electric currents along flow direction (current supply - 150A)
- Small (~ 0.1 T) surface normal fields built with permanent magnets



Experimental Parameters

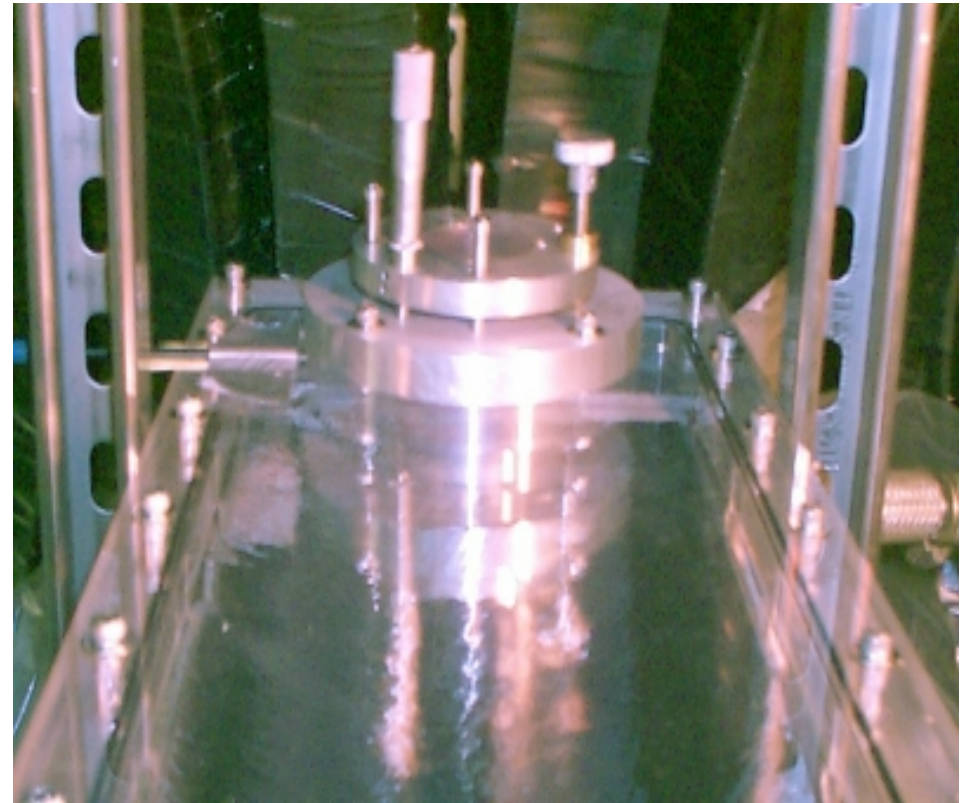
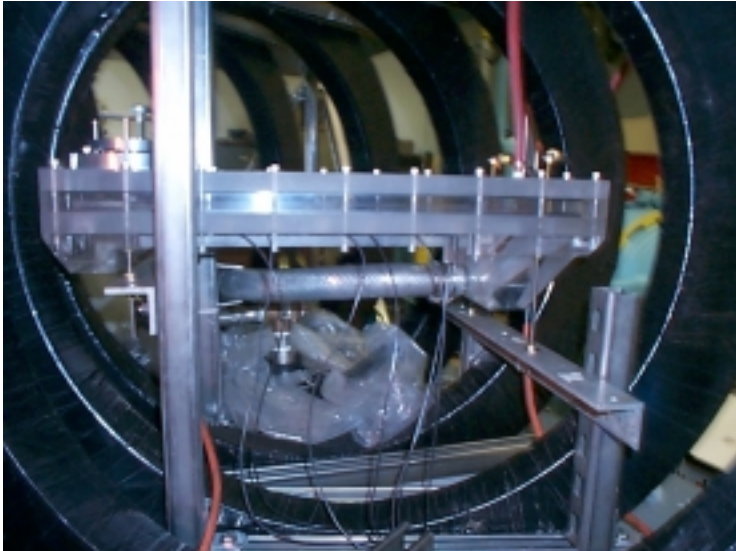
Re = 0-30,000

Ha = 0-200

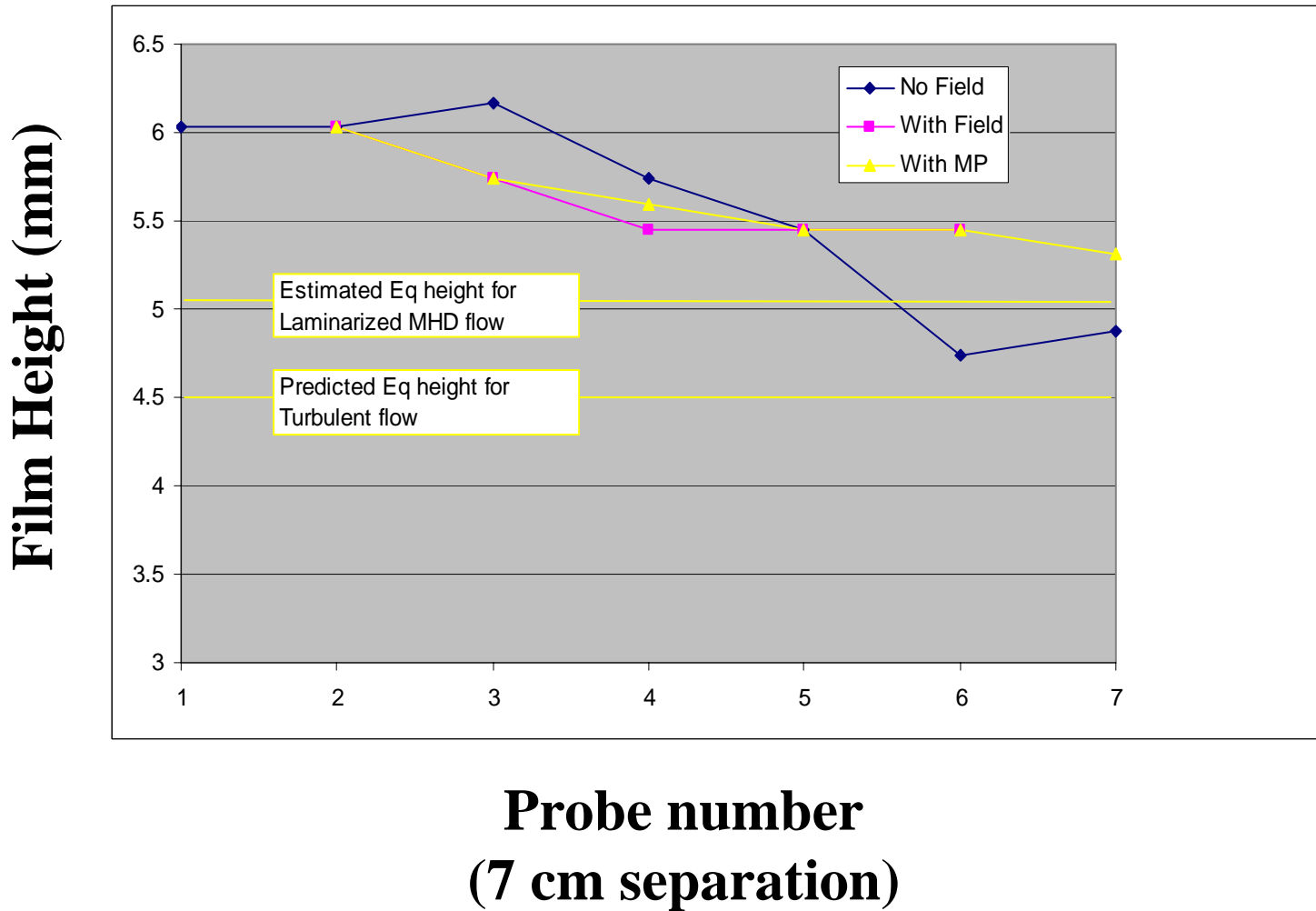
Fr = 0-50

$\beta = 0.3-0.01$

Z = 0-1.5



Ga-In-Sn flowing in 20 cm wide, open channel



Observations

- **Perfectly coplanar field stabilizes surface wakes and ripples**
- **As chute is inclined, LM tends to run in rivulets and not cover the entire back wall.**

Immediate Plans

- **Fix small problems (nozzle sticking, MP currents)**
- **Compilation of data and comparison to models, various flowrates, angles of inclination, MP currents, surface normal field configurations**

Later this year

- **Reduced width (10 cm wide) for stronger Hartmann effects**
- **Geometric complications, expanding/contracting flow areas**