PROPOSAL for a
FIXTURE FOR BUILDING SILICON LADDERS

SCIPP, 4/12/00

Motivations/ Requirements:

- Detectors vacuumed down during cure
- Bond line thickness controlled
- Reference pins for ladder edge straight to 10 microns
- Z controlled to avoid steps between detectors
- Microscope/CCD camera for QC
- Ergonomic, simple to use, stable, solid construction

Concept:

- One fixed block and 3 linear slides pinned on base plate
- All machining (XYZ) done after mounting slides on plate
- Delrin adapter plates mounted on all 4 pieces and vacuum chuck machined into surface.
- Pin holes bored in one machine setup (10 micron straightness)
- Stainless steel pins
- Lever action or eccentric pin used to move slides from zero position to 100 micron position. Each slide has one lever.

Procedure concept:

- All slides put in zero position by pushing levers one direction (clearly marked).
- First detector placed on fixed block, pushed against pins, and vacuumed down
- Second detector dipped in glue, pushed against pins and previous detector, and vacuumed down
- Push lever to 2nd position to set 100 micron bond line
- Inspect bond line with CCD camera
- Repeat for third and fourth detectors
- Lower hood with UV lamps over top for curing

Estimated cost:

▪ 3 linear slides (ball bearing)	3 x $250	$750
▪ Materials	‘	$500
▪ Machining	3 days	$2250
▪ Construction/QC	in house	$0
▪ Microscope, camera, monitor		$3000
▪ Microscope mount/ gantry		$1000
▪ Glue curing setup		???
TOTAL		**$7500** + curing setup
PROBABLE COST		**< $10,000**

Issues:

- What happens to the glue when you push the detectors together?
- Is UV light needed below the detectors?