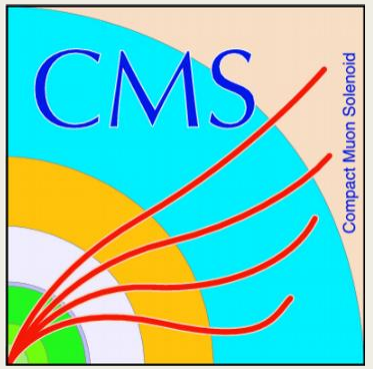
Irradiation Update from Brown

Nick Hinton, Ulrich Heintz, Meenakshi Narain, Eric Spencer, Justin Voelker, Gabe Altopp, Bjorn Burkle

Brown University, Providence

9 June 2020

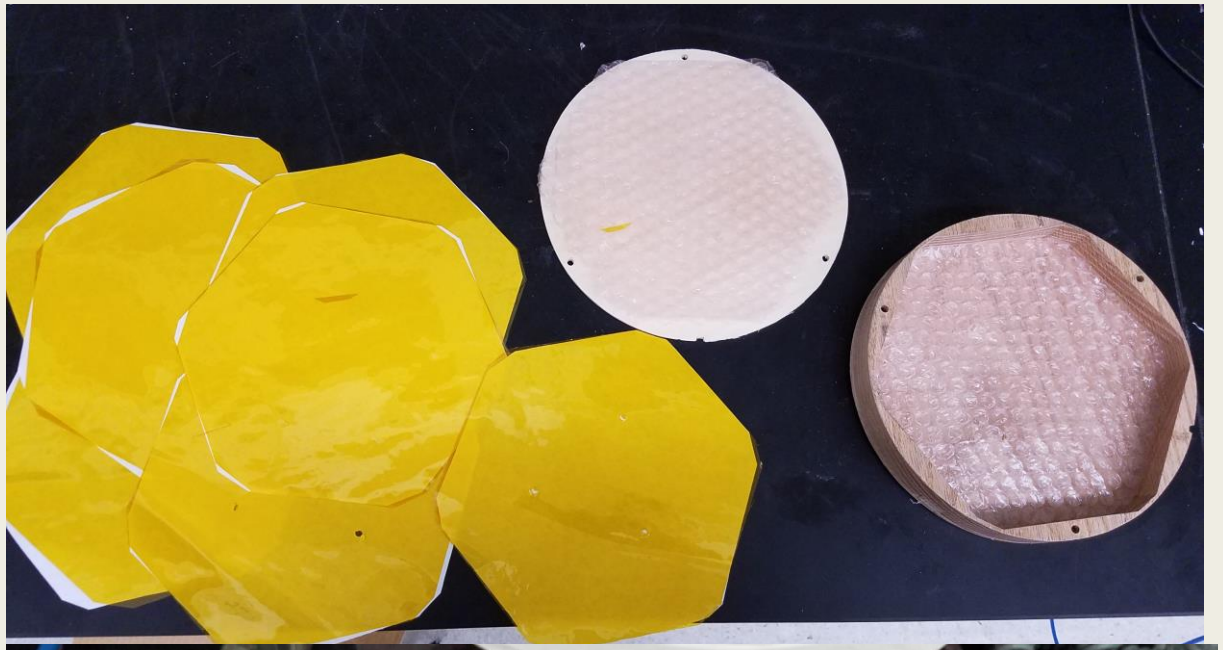


Outline

- 4-sensor fit test results
- Irradiation planning
- Future Work

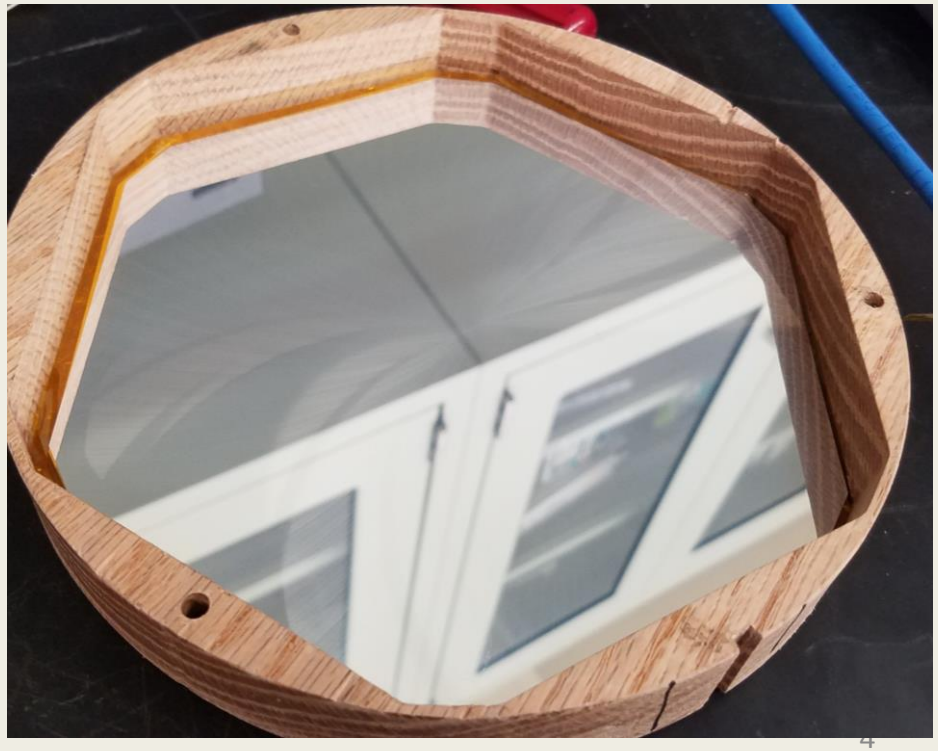
4-sensor Test Fit

- Mechanical sensor dummies used for 4-sensor fit test
- Stack up of material in puck:
  - Puck
  - Bubble wrap
  - Kapton foil, sensor (x4)
  - Kapton foil
  - Bubble wrap (x3)
  - Puck lid



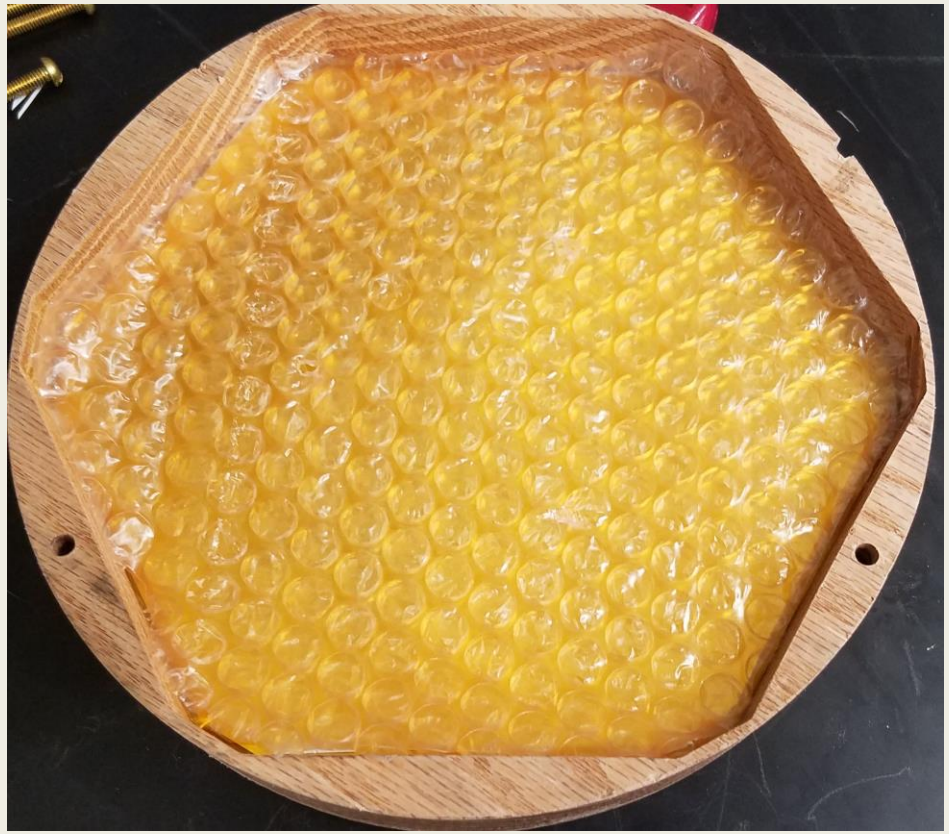
4-sensor Test Fit

- 1 layer of bubble wrap on either side had ~12mm of space remaining
- 2 additional layers of bubble wrap filled the gap
- Only 1 layer of Kapton foil between sensors



4-sensor Test Fit

- After the puck was closed, I handled the puck as it will be during irradiation
  - Did NOT give it the rougher handling expected during shipping
- There was no obvious damage to the sensors upon opening the puck



Irradiation Planning

- Further sensor stack tests planned
  - Include RTDs, all fluence monitoring devices, add 2nd layer of Kapton between sensors
- Our stock of irradiation consumables (RTDs, D0 diodes, foils) is sufficient for a few runs, but our supply of labor for prep is severely limited
  - Shouldn't cause any major bottlenecks, but near-mid term irradiations may be slowed as a result
- Received 3rd irradiation cylinder, extra hockey puck from FSU today
  - Thanks!

Future Irradiations

- Additional tests with mechanical dummies in existing pucks
  - Include RTDs, diodes, full suite of fluence monitoring devices
- Currently writing proposal to resume irradiation work
  - Dependent on university approval
- Silicon monitoring diodes from thermal run 3 were too active to collect at the last reactor visit (pre-COVID)
  - I will collect them next time I go to the reactor
  - Will also do a fit check with the 3rd aluminum cylinder