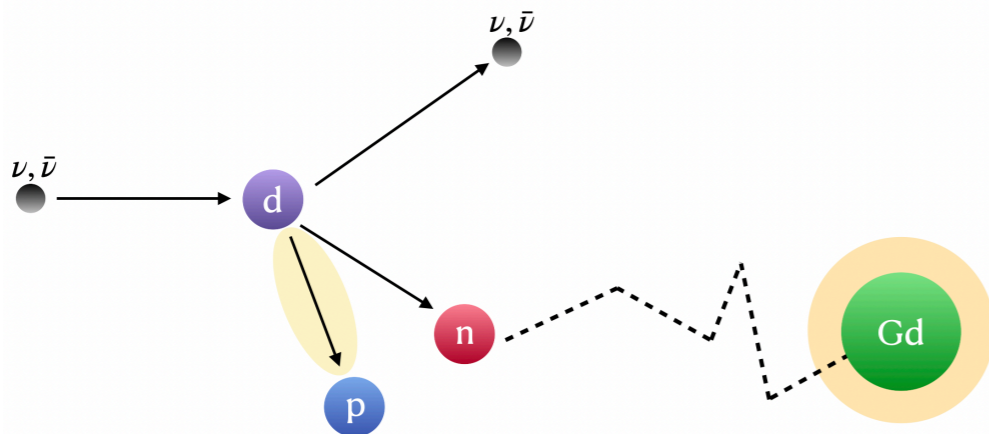


# Deuterated Scintillator Detector

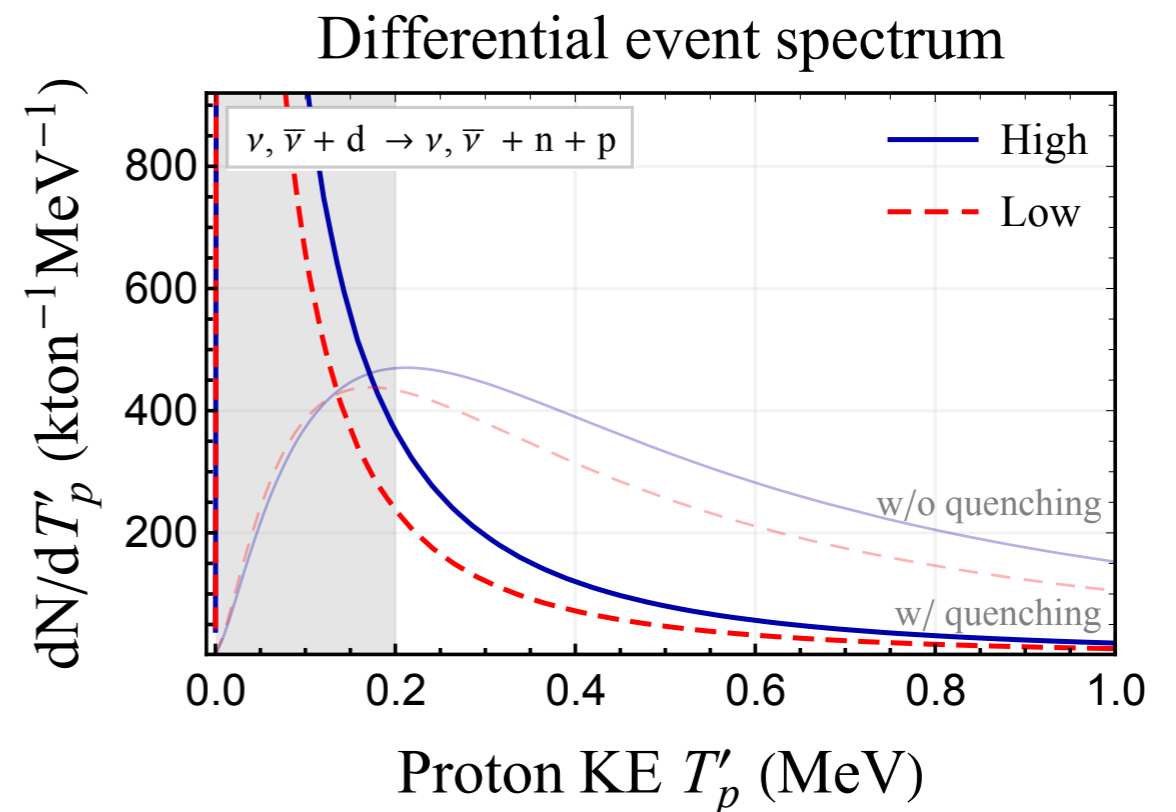
- Bhavesh Chauhan (TIFR, India)

We propose a kton-scale deuterated liquid scintillator, with added Gd, and instrumented with PMTs that can be used to study low energy neutrinos esp. through the Neutral Current channel.

Interaction	Channel	-Q (MeV)
$\nu + d \rightarrow \nu + n + p$	NC	2.224
$\bar{\nu} + d \rightarrow \bar{\nu} + n + p$	NC	2.224
$\nu_e + d \rightarrow e^- + p + p$	CC	1.442
$\bar{\nu}_e + d \rightarrow e^+ + n + n$	CC	4.028



For a typical galactic supernova, we expect: 400 NC events, 170  $\nu_e$  events, and 100  $\bar{\nu}_e$  events.

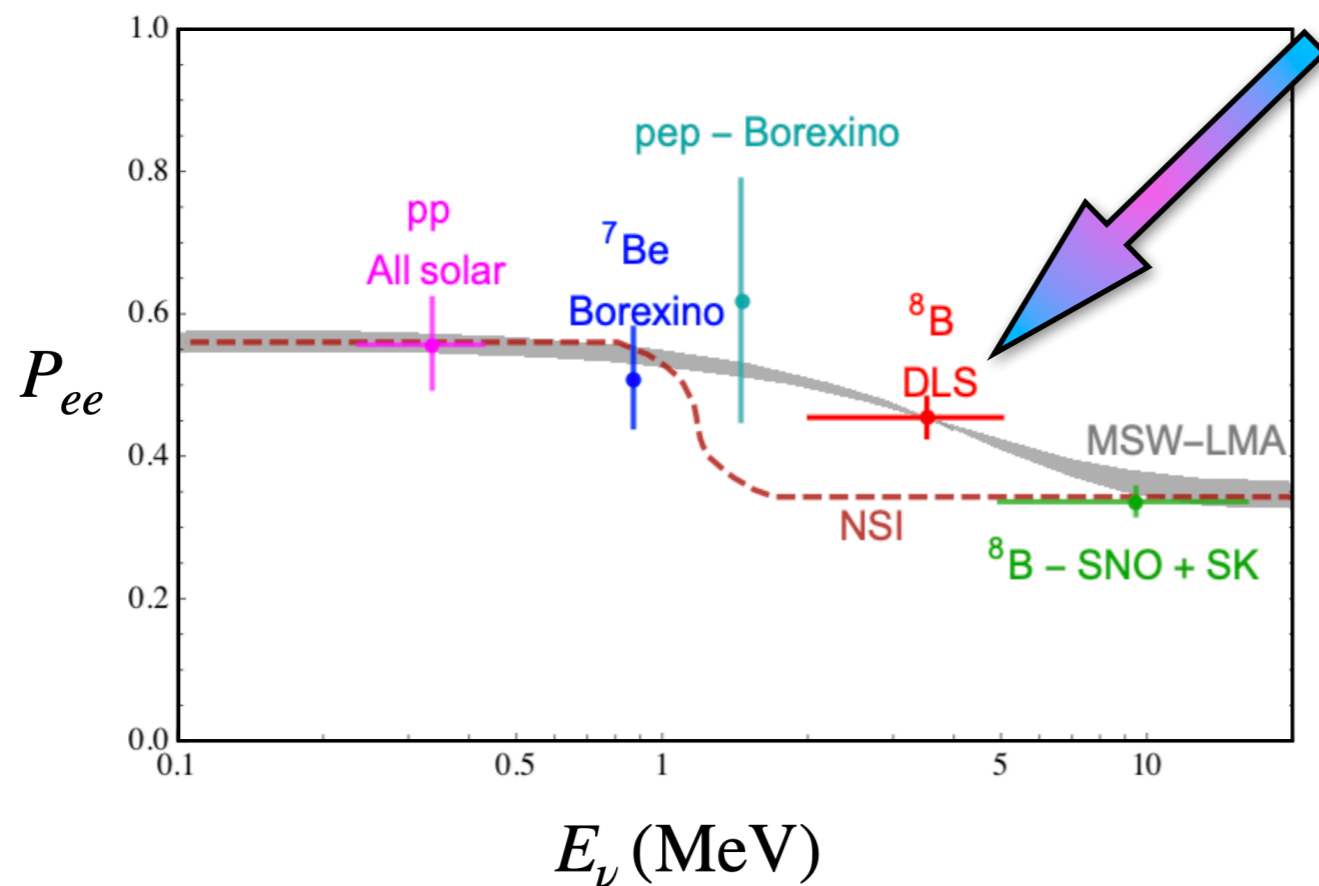
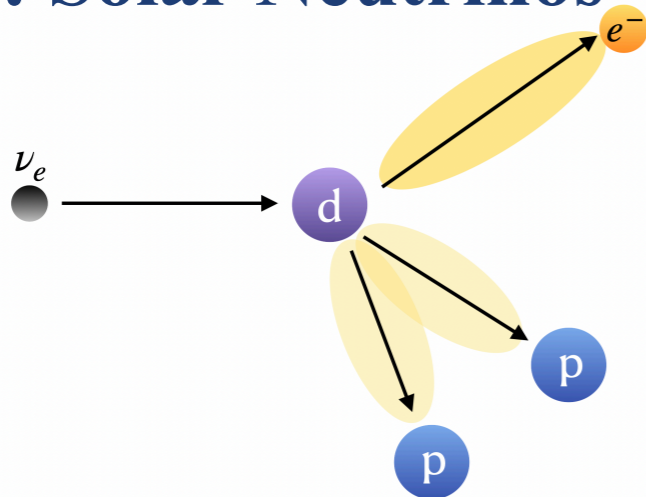


**Reconstruction is Challenging!**

# Deuterated Scintillator Detector

- Bhavesh Chauhan (TIFR, India)

## Day Job : Solar Neutrinos



- The main goal of DLS relies on
  - Reconstructability
  - Lowering Threshold  $\sim 1$  MeV
- Other interesting ideas are being considered as well,
  - Water based Deut. Scin.
  - Heavy Water based Ord. Scin.
- Science goals are being studied, ideas welcome!