## Phenomenology 2025 Symposium



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## LIQUIDating the Gallium Neutrino Anomaly

Monday 19 May 2025 16:30 (15 minutes)

The Gallium Anomaly (GA) currently stands at a global significance of greater than  $5\sigma$ . Most viable BSM solutions quickly run into strong tensions with reactor and solar neutrino data. In this talk, I'll argue that the GA resolution requires the ability to probe spectral features and oscillation behavior, therefore requires a new detection strategy for low-energy neutrinos. Firstly, I'll discuss the most viable and currently promising solution involving sterile neutrinos and a tuned MSW resonance. Secondly, I'll show that solar neutrino measurements based on  $\nu$ -e scattering cannot probe the fine-tuned parameter regions for GA. Finally, we propose a new setup with an opaque scintillator detector such as LiquidO, to detect such narrow resonances, which can completely test the GA at more than  $5\sigma$  in about 100 days with a 3.2 MCi <sup>51</sup>Cr source. We also highlight that such a unique detector will open unexplored avenues in low-energy neutrino spectroscopy.

## Mini Symposia (Invited Talks Only)

Plenary (Invited talks only)

Author: Dr CHAUHAN, Garv (Arizona State University)
Co-author: HUBER, Patrick
Presenter: Dr CHAUHAN, Garv (Arizona State University)
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