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# The road to SuperK-Gd

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The Super-Kamiokande detector (SuperK) has been running since 1996. In addition to the discovery of neutrino oscillations which led to the Nobel Price in Physics in 2015, it has delivered many important results: the best proton lifetime and Diffuse Supernova Neutrino Background limits to cite two examples. With an extensive physics programme and a long and successful past, the SuperK collaboration has been working to go beyond these limits. Many of our studies could be improved if not only charged particles but also neutrons could be detected.

Gadolinium has the largest cross-section for thermal neutron capture, emitting a gamma cascade of about 8 MeV. This cascade is detected with much higher efficiency than the capture on protons which just produces a single gamma of 2.2 MeV. Thus, by dissolving 0.2% of gadolinium (Gd) sulfate in mass in the otherwise ultrapure SuperK water, 90% of the neutrons will be captured on Gd. To explore and fulfil this idea the EGADS project was funded in 2009. After the success of this project, the SuperK collaboration approved in 2015 the SuperK-Gd project. This year we will open the detector, refurbish and prepare it for a new era that will bring many new exciting results. In this talk, we will summarise the most important past milestones in the road towards SuperK-Gd as well as the work ahead of us to achieve its goals.

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