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## **Astrophysical neutrino point sources as a probe of new physics**

*Thursday 31 August 2023 16:00 (15 minutes)*

Astrophysical neutrinos play an important role in modern multi-messenger astrophysics. They can be used to learn about the properties of their astrophysical origin but also to study and probe particle physics beyond the Standard Model not accessible in ground based laboratories, especially due to their high energy.

In this talk we consider a new light scalar field which mediates neutrino-neutrino interactions and thus turns the Universe partially opaque for them by increasing the likeliness to scatter with relic neutrinos of the cosmic neutrino background when traveling through space. By studying the magnitude of absorption for neutrinos coming from the two extra galactic sources identified so far by IceCube, namely NGC 1068 and the blazar TXS 0506+056, we can put limits on the coupling strength and the mediator mass which, as we show, significantly increase if the lightest neutrino is massless.

The work we present here is based on arXiv:2304.08533.

### **Submitted on behalf of a Collaboration?**

No

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