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## **DAMA/LIBRA annual modulation and Axion Quark Nugget Dark Matter Model**

*Wednesday, 7 July 2021 10:05 (35 minutes)*

The DAMA/LIBRA experiment shows  $9.5\sigma$  evidence for an annual modulation in the (1 – 6) keV energy range, strongly suggesting that the observed modulation has the dark matter origin. However, the conventional interpretation in terms of WIMP-nucleon interaction is excluded by other experiments. We propose an alternative source of modulation based on the so-called axion quark nugget (AQN) dark matter model which was originally invented long ago to explain the similarity between the dark and visible cosmological matter densities, i.e.  $\Omega_{\text{dark}} \sim \Omega_{\text{visible}}$ . This proposal can be directly tested by COSINE-100, ANAIS-112, CYGNO and other similar experiments. I will also mention other possible manifestations of the same model such as the solar corona heating problem, and the recently detected by Telescope Array the Mysterious Burst Events which are very distinct from conventional cosmic air showers.

The talk is based on several recent papers including:

1. A.-Zhitnitsky, "DAMA/LIBRA annual modulation and Axion Quark Nugget Dark Matter Model," Phys. Rev. D {101}, no.8, 083020 (2020) [arXiv:1909.05320 [hep-ph]]
2. A.-Zhitnitsky, "The Mysterious Bursts observed by Telescope Array and Axion Quark Nuggets," J. Phys. G {48}, no.6, 065201 (2021) [arXiv:2008.04325 [hep-ph]]

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