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Superweak extension of the Standard Model

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The superweak (SW) force is a minimal, anomaly-free $U(1)$ extension of the standard model (SM), designed to explain the origin of (i) neutrino masses and mixing matrix elements, (ii) dark matter, (iii) cosmic inflation, (iv) stabilization of the electroweak vacuum and (v) leptogenesis. In this talk we discuss how the parameter space of the model is constrained by providing viable scenarios for the first four of this list. The talk will summarize the findings published in the following research articles on the arXiv: 1812.11189, 1911.07082, 2104.11248, 2104.14571, 2105.13360, 2204.07100 and 2301.06621.

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