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The hidden side of scalar-triplet models with spontaneous CP violation

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The Standard Model of particle physics is in remarkable agreement with most experimental data so far. However, a lot of questions remain unanswered, such as the origin of neutrino masses or the need for extra sources of CP violation. Possible solutions rest on scalar sector extensions, popular beyond-the-Standard-Model scenarios. The addition of scalar triplets is an attractive possibility, with small neutrino masses being generated via the type-II seesaw mechanism. Such models are much studied in the literature, but they still hide some features underneath. Although not possible with just one triplet, a CP-breaking vacuum is possible with the addition of two triplets, which could lead to interesting leptonic CP-violating effects. However, it also introduces novel and unexpected features in its scalar spectrum. In this work, we briefly present such hidden features. Based on https://arxiv.org/pdf/2109.13179.pdf.

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