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Two-component scalar dark mater in Z_{2n} scenarios

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In multi-component scalar dark matter scenarios, a single Z_N ($N \geq 4$) symmetry may account for the stability of different dark matter particles. Here we study the case where N is even ($N = 2n$) and two species, a complex scalar and a real scalar, contribute to the observed dark matter density.
We show that, thanks to the new interactions allowed by the Z_{2n} symmetry, current experimental constraints can be satisfied over a wide range of dark matter masses, and that these scenarios may lead to observable signals in direct detection experiments.

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