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Direct detection of WIMPs of arbitrary spin

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There is no compelling reason for dark matter particles to be elementary, or for their spin to be limited to 0, 1/2, or 1. Composite dark matter, for example, or mirror dark matter, or molecular dark matter with suppressed lower multipoles, may interact with nuclei through high spin operators. I will present a systematic approach to characterize the most general non-relativistic WIMP-nucleus interaction allowed by Galilean invariance for a WIMP of arbitrary spin, and a first phenomenological analysis of the direct detection of high-spin dark matter, in particular quadrupolar, octupolar, and hexadecapolar dark matter.

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