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Closing in on mass-degenerate dark matter scenarios with antiprotons and direct detection

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Over the last years both cosmic-ray antiproton measurements and direct dark matter searches have proved particularly effective in constraining the nature of dark matter candidates. The present work focusses on these two types of constraints in a minimal framework which features a Majorana fermion as the dark matter particle and a scalar that mediates the coupling to quarks. We derive antiproton and direct detection constraints using the latest data and paying close attention to astrophysical and nuclear uncertainties. Interestingly, these limits are orthogonal to ongoing collider searches at the Large Hadron Collider, making it feasible to close in on degenerate dark matter scenarios within the next years.

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