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Title:	Search for a Light CP-odd Higgs Boson and Low-Mass Dark Matter at the Belle Experiment
Authors:	Bhardwaj, V. (/jspui/browse?type=author&value=Bhardwaj%2C+V.)
Keywords:	Higgs boson Energy WIMP
Issue Date:	2019
Publisher:	American Physical Society
Citation:	Physical Review Letters, 122(1).
Abstract:	We report on the first Belle search for a light CP-odd Higgs boson, $A_0$ , that decays into low mass dark matter, $\chi$ , in final states with a single photon and missing energy. We search for events produced via the dipion transition $Y(2S) \rightarrow Y(1S)\pi^+\pi^-$ , followed by the on-shell process $Y(1S) \rightarrow \gamma A_0$ with $A_0 \rightarrow \chi\chi$ , or by the off-shell process $Y(1S) \rightarrow \gamma\chi\chi$ . Utilizing a data sample of $157.3 \times 10^6$ $Y(2S)$ decays, we find no evidence for a signal. We set limits on the branching fractions of such processes in the mass ranges $M_{A_0} < 8.97$ GeV/c <sup>2</sup> and $M_\chi < 4.44$ GeV/c <sup>2</sup> . We then use the limits on the off-shell process to set competitive limits on WIMP-nucleon scattering in the WIMP mass range below 5 GeV/c <sup>2</sup> .
Description:	Only IISERM authors are available in the record.
URI:	<a href="https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.122.011801">https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.122.011801</a> ( <a href="https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.122.011801">https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.122.011801</a> ) <a href="http://hdl.handle.net/123456789/2274">http://hdl.handle.net/123456789/2274</a> ( <a href="http://hdl.handle.net/123456789/2274">http://hdl.handle.net/123456789/2274</a> )
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