

SensCalc: public and unified calculations of sensitivities to feebly interacting particles

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The idea that new physics could take the form of feebly interacting particles (FIPs) —particles with a mass below the electroweak scale, but which may have evaded detection due to their tiny couplings or very long lifetime —has recently gained a lot of traction. A wide variety of experiments have been proposed to search for this type of particles. However, the assumptions made about the models or acceptance can differ greatly between sensitivity studies, making it difficult to do an apples-to-apples comparison between those experiments. To address this issue, we have developed *SensCalc*, a Mathematica package designed to consistently compute the expected signal across a broad range of models and experiments (both at colliders and beam dumps) while keeping the assumptions under control. In this talk, I will introduce *SensCalc*, compare it with related packages, discuss its strengths and limitations, and finally show how the sensitivity can change when some core assumptions are varied.

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