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Introducing SPADES

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SPADES (Spectra and Phase spAce factors in Double bEta decayS), a software package for theoretical double beta decay analysis, integrates RADIAL package and the DHFS method to compute electron wave functions accurately in complex atomic systems. Its user-friendly interface facilitates input of parameters for seamless computations. Researchers can compare spectra and phase space factors across various approximations, exploring diverse theoretical frameworks and assessing nuclear structure uncertainties. SPADES offers the important capability to generate double beta decay events in HEPMC3 format, with additional formats available on request. This feature enhances its utility for Monte Carlo simulations and compatibility with different analysis tools. With its emphasis on precision, versatility, and ease of use, SPADES emerges as a valuable tool for unraveling the complexities of double beta decay processes and advancing our understanding of fundamental particle physics.

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