

Ab initio theory towards reliable neutrinoless double beta decay nuclear matrix elements

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As experiments searching for neutrinoless double beta decay with Xe136 are in the planning phase of a next generation with hopes to completely probe the inverted mass hierarchy, the need for reliable nuclear matrix elements, which govern the rate of this decay, is stronger than ever. Since a large discrepancy is found when computing this quantity with different nuclear models, a large unknown still exists on the sensitivity of these experiments to the effective neutrino mass. In this talk I will present how, using ab initio methods relying on systematic expansions, a rigorous statistical uncertainty can be achieved. I will detail how this uncertainty is obtained and what are the next step to improve on the current calculations.

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