Estimation of pairing correlations for nuclear mass table evaluation LUIS ROBLEDO, Universidad Autonoma de Madrid, GEORGE BERTSCH, University of Washington — Mean field models provide a well-justified theoretical approach to generate mass tables, but without some extension the energy misses the correlation energy associated with the restoration of broken symmetries such as angular momentum or particle number. The Lipkin-Nogami (LN) method is often used to treat the pairing correlation energy in mass table evaluations, mainly because of its simplicity. However, it has been found that in many nuclei pairing correlations are weak and the LN method, which is an approximation to the more sophisticated Particle Number Projection (PNP), fails. We propose an alternative to the LN method which can be safely applied in the regime of weak pairing correlations and is simpler than variation after projection (VAP) for the PNP. It is based on a Restricted VAP for PNP using the fluctuation on particle number as coordinate. We show that in the strong pairing correlation limit the LN method is recovered. The method is applied to the evaluation of the even-even nuclei mass table with the Gogny parametrization of the nuclear interaction.

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