ROTATIONAL DAMPING, RIDGES AND THE QUASICONTINUUM OF γ RAYS IN ^{152}Dy

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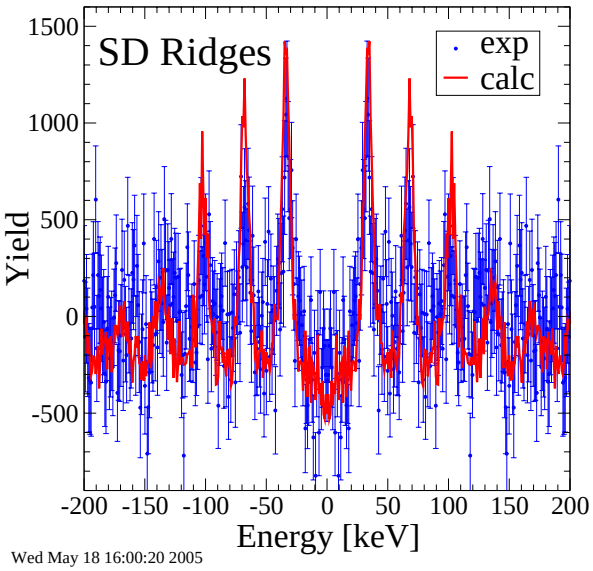
Superdeformation in ^{152}Dy was originally discovered by studying correlated ridges, i.e., structures parallel to the diagonal, in γ–γ coincidence matrices [1,2]. Only afterwards was the first discrete superdeformed (SD) band discovered [3]. It took 16 years to link this SD band to the normal deformed (ND) states it decays into [4], and the excited SD band 6, built on an octupole vibration, has been linked to the yrast SD band as well [5]. These two feats were only possible because a *very* large data set was collected with Gammasphere. This data set also makes it possible to take a new look at the continuum of γ rays, with much higher precision.

Both the quasi–continuum of γ rays and the ridges from the feeding (and decay) of SD and ND bands have been extracted in the nucleus ^{152}Dy. The entry distributions for ND and SD bands have also been extracted. A Monte Carlo model was developed that *simultaneously* describes all the quasi–continuum and ridge spectra as well as the feeding intensity of the superdeformed bands.



Monte Carlo simulations of the QC and ridge spectra allows for the extraction the rotational damping strengths in the SD and ND wells of ^{152}Dy and will elucidate the feeding and decay of SD bands in the A$\sim$150 mass region. For simplicity, first MC calculations with fixed (average) values of Γ_{rot}, Γ_{μ} and I_{nar} will be presented. Then follows a presentation of calculations with more realistic functions of these quantities which depend on spin and excitation energy. Finally the SD entry distribution will be extracted and compared to the total entry distribution for ^{152}Dy. This is the first time the rotational damping widths have been extracted in a SD well in the A$\sim$150 mass region.

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