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

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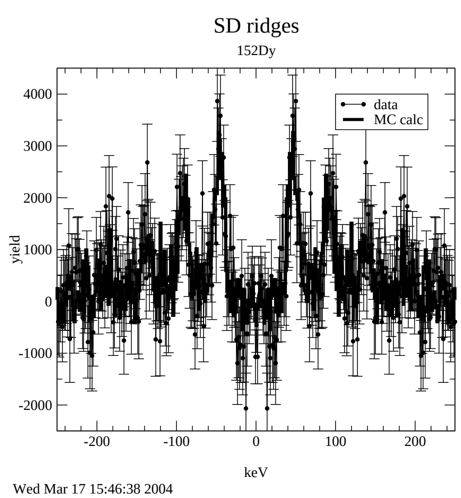
Superdeformation (SD) in ^{152}Dy was originally discovered by studying ridges, i.e. structures along the diagonal, in γ-γ matrices[1]. Only afterwards was the first discrete superdeformed (SD) band discovered[2]. It took 16 years to link the SD band to the normal (ND) deformed states it decays into[3]. We have also recently linked SD band 6, built on an octupole vibration, to the yrast SD band[4]. These two feats were only possible because we collected a very large dataset with Gammasphere using the reaction ^{108}Pd(^{48}Ca,4n)^{152}Dy at 194 MeV. This very large dataset allows us to reexamine and look at the continuum γ rays with much more precision. Fig. 1 shows the ridges in coincidence with band 1 in ^{152}Dy. Two clean discrete SD γ ray were required before the γ-γ matrix was updated. The matrix is then background subtracted, unfolded[5], corrected for detector efficiency and finally core subtracted[6]. Both the ND and SD discrete transitions as well as their coincidences along the axis (stripes) are removed (to improve the signal to noise) and a region from 800 keV to 1200 keV is projected normal to the diagonal. The final result, presented in Fig. 1, shows a spectacular ridge structure - at least four ridges can be seen, as well as a shallow valley and a wide component.



A simple 'toy model' indicates that there is no way to reproduce the ridges in Fig. 1 with just one damping width; two components are present. Even with two components of damping, it is not possible to reproduce the ridges and the valley at the same time in a simple 'toy model'. Thus, dynamic effects, such as taken into account in the Monte Carlo (MC) code kl_sd/kla[7], are important. This MC code has been very successful in describing the SD A=190 region[7]. The latest results reproducing (1)the ND Quasicontinuum (QC), the QC from (2)the feeding and (3)decay of the SD band, (4)the SD ridges and (5)ND ridges *simultaneously*, using one consistent set of parameters, will be presented and the implications discussed.

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