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## Nuclear Deformation in the Laboratory Frame

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The intrinsic view of quadrupole deformed nuclear rotors is still prevalent in the community. In it, the shape is characterised by the  $\beta$  and  $\gamma$  parameters. A lot of discussions have taken place about the existence of “rigid” triaxial nuclei, i.e. having a well defined value of  $\gamma$ . However, the only invariant quantities that are physically relevant in the laboratory frame are the Kumar invariants  $Q^2$  and  $Q^3$ , from which  $\beta$  and  $\gamma$  can be deduced. We have been able to compute recently, without any approximation, the higher order invariants (up to  $Q^6$ ) that make it possible to evaluate the variances of  $\beta$  and  $\gamma$ . The conclusions are that  $\beta$  is softer than usually assumed, and that the  $\gamma$  span at  $1\sigma$  is typically of 20-30°, at odds with the image of rigid triaxiality. I will touch upon as well some issues related to the extraction of these shape parameters by means of ultra relativistic heavy ion collisions.

### Collaboration

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