

Lifetime measurements by Doppler methods with the RoSphere array

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The Doppler techniques (DSAM- Doppler Shift Attenuation Method and RDDS Recoil Distance Doppler Shift) are widely used gamma-ray spectroscopy techniques aimed at measuring the lifetime of excited nuclear states by using the Doppler shift of the de-exciting gamma-ray transition as a stopwatch. The RoSphere setup installed at the Bucharest TANDEM was used for lifetime measurements by the DSAM method in heavy ions and alpha induced reactions and by the RDDS method, in connection with a plunger device build following the Cologne design. Combined with in-beam fast timing technique, the lifetime experiments yielded a quasi-complete study of ^{120}Te , part of a wider experimental campaign aimed at studying the collective behaviour in light Tellurium isotopes. The specific details of the methods and reaction mechanisms will be discussed and results will be presented.

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