

To the continuum and beyond: Using particle-gamma coincidences for nuclear spectroscopy

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Monday, November 26 ❖ 4:00 P.M. ❖ 124 NSH

Particle-gamma coincidences can provide several advantages for nuclear spectroscopy studies, including: precision level energies, decay paths and measurements of angular momentum transferred. For this work, a silicon telescope array (allowing light ion identification and measurement) was combined with an array of HPGe Clover detectors (allowing coincident gamma ray energy measurement). Several techniques for studying light ion transfer reactions utilizing such coincidence spectroscopy will be demonstrated. Specifically, low-excitation energy spectroscopy of discrete states in odd-even Gd isotopes and odd-odd ^{88}Y will be presented. Techniques which can be used to probe the statistical continuum region, above the pair gap and moving towards the separation energy, will also be presented.