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### Recent discoveries on particle emitting nuclei<sup>1</sup>

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In this presentation I will provide a brief introduction to the concepts of particle emission from exotic nuclei. Measuring the energies of the emitted particles, ideally correlated to residue implantation event or subsequent decay events, provides a clean and precise probe to study the underlying nuclear structure and masses of the initial and final nuclei. Such correlations can also be used in experiments with very limited statistics, making it suitable for the identification of new elements and new isotopes. Particle emission studies are important in understanding of the structure of atomic nuclei, but they also serve an experimental probe to study the astrophysical processes, such as the  $r$ - and  $rp$  processes, occurring far away from the valley of  $\beta$ -stability. I will introduce these topics by summarizing a few of the recent highlights on particle emitting nuclei including, but not limited to, the discovery of “superaligned”  $\alpha$ -decay chain  $^{108}\text{Xe} \rightarrow ^{104}\text{Te} \rightarrow ^{100}\text{Sn}$  [1], and a very weak proton emission branch in  $^{108}\text{I}$  [2]. The former is an important benchmark for the models of  $\alpha$  decay, whereas the latter observation allowed us to study the termination of the astrophysical  $rp$  process.

1. Phys. Rev. Lett. **121**, 182501 (2018)
2. Phys. Lett. B **792**, 187 (2019)

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