

## Resonance scattering with exotic beams - past, present and future

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Experiments employing resonance scattering reactions with radioactive beams have been performed since mid-90s, and originally they were primarily targeting structure of light weakly bound or unbound proton rich nuclei [1]. Strong scientific potential of resonance reactions as an experimental tool has been immediately recognized for physics of exotic proton rich nuclei. Unlike for stable nuclei, for weakly bound or unbound nuclei resonance reactions provide access to states with small or zero excitation energy. Typically low level density at small excitation energies allow for detailed and often unambiguous analysis. These features, combined with application of thick target inverse kinematics approach that allowed high efficiency and excellent energy resolution with relatively simple experimental setup, made resonance scattering experiments popular. Many successful experiments have been performed, including those in which ground states of exotic nuclei were observed for the first time (10N is the latest example [2]). More recently resonance reactions have been applied to study clustering phenomena in neutron and proton rich nuclei [3, 4] and also the structure of neutron rich nuclei through isobaric analog states [5]. Significant improvements of experimental techniques, such as active target systems, open up new exciting opportunities. The goal of this talk is to provide a brief highlight of the most interesting past results, overview the current directions and discuss the outlook and future perspectives.

### References

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- [3] C. Fu, et al., Phys. Rev. C, 77, 064314 (2008).
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### Summary

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