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### Studying quantum-dynamics in collision involving highly charged ions

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While the study of the dynamics in scattering reactions between ions and atoms or molecules is a research field with a very long tradition, there are still many interesting and new aspects that are presently investigated. As compared to other projectile species such as electrons or photons, ions are particularly attractive because they allow to generate the shortest (down to zeptoseconds) and most intense electromagnetic pulses (well above  $10^{20}$  W/cm<sup>2</sup>) that can be created in laboratories today. The present and planned accelerator facilities available at FAIR provide the ideal experimental tools to study the interaction of target systems with these pulses even in domains that were previously not accessible. In this presentation, some examples on recent advancements in the study of ion collision dynamics will be introduced and prospects for experiments at FAIR will be discussed.

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