Exploring nuclei at the limit of REX-ISOLDE and HIE-ISOLDE using an active target detector
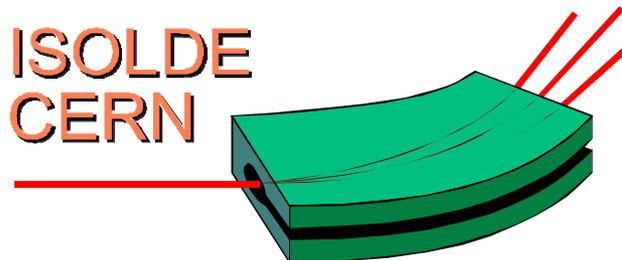
Riccardo Raabe (GANIL)

New Opportunities in the Physics Landscape at CERN
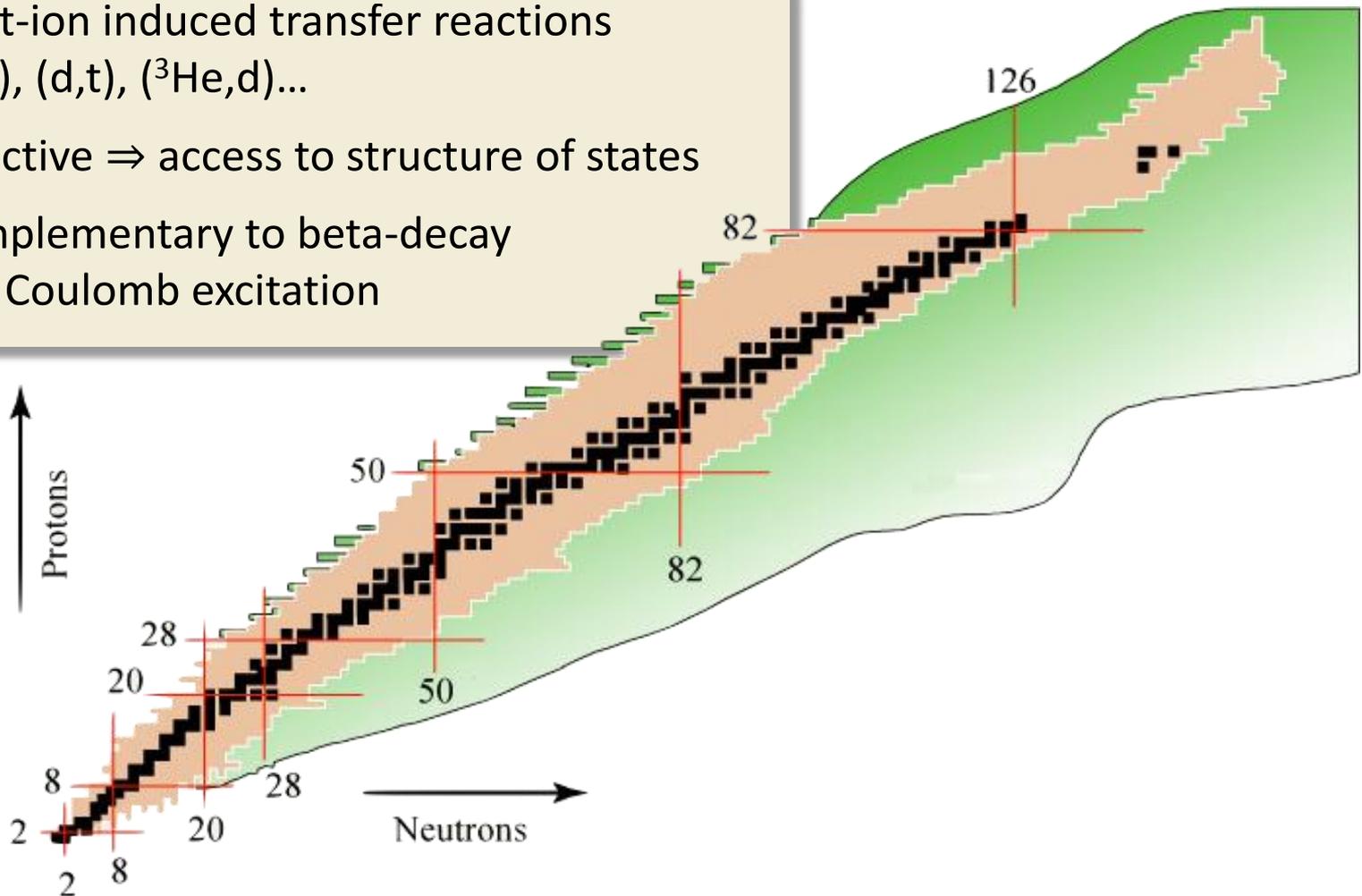
CERN, May 11–13, 2009

Use **direct reactions** as spectroscopic tool to study the **evolution of nuclear structure** far fom stability

- Light-ion induced transfer reactions (d,p), (d,t), (^{3}He,d)…

- Selective ⇒ access to structure of states
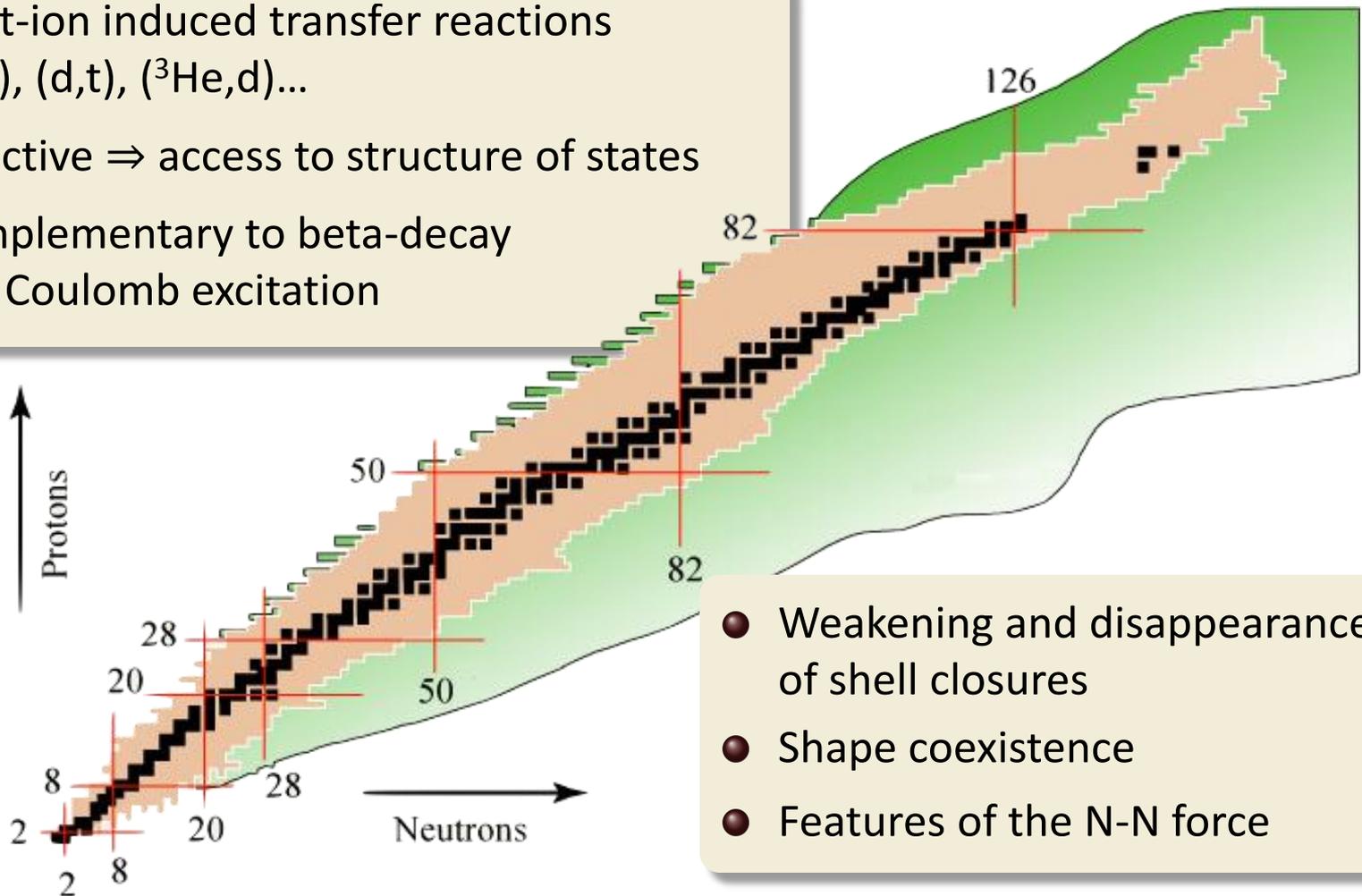
- Complementary to beta-decay and Coulomb excitation

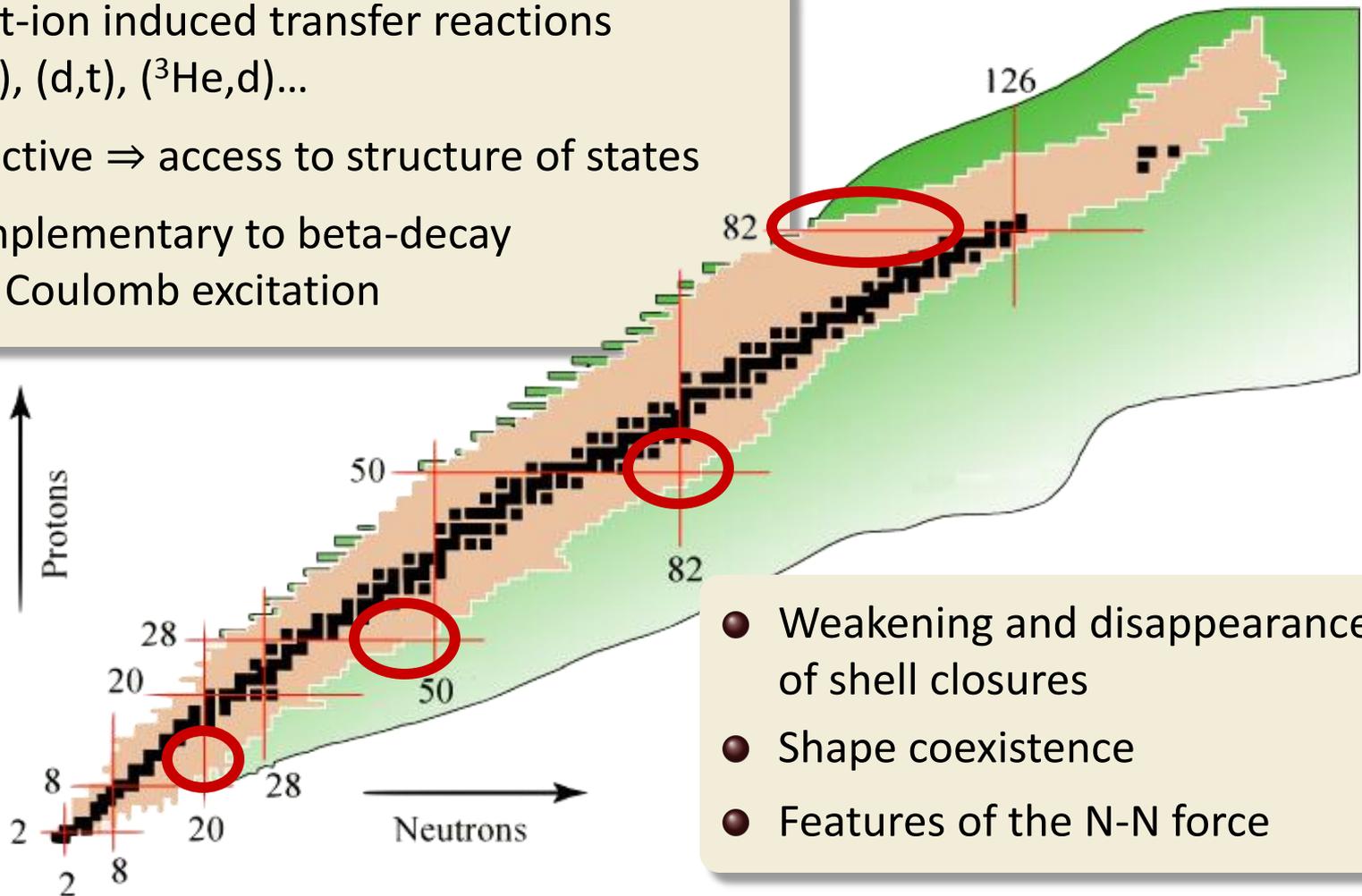Use **direct reactions** as spectroscopic tool to study the **evolution of nuclear structure** far fom stability

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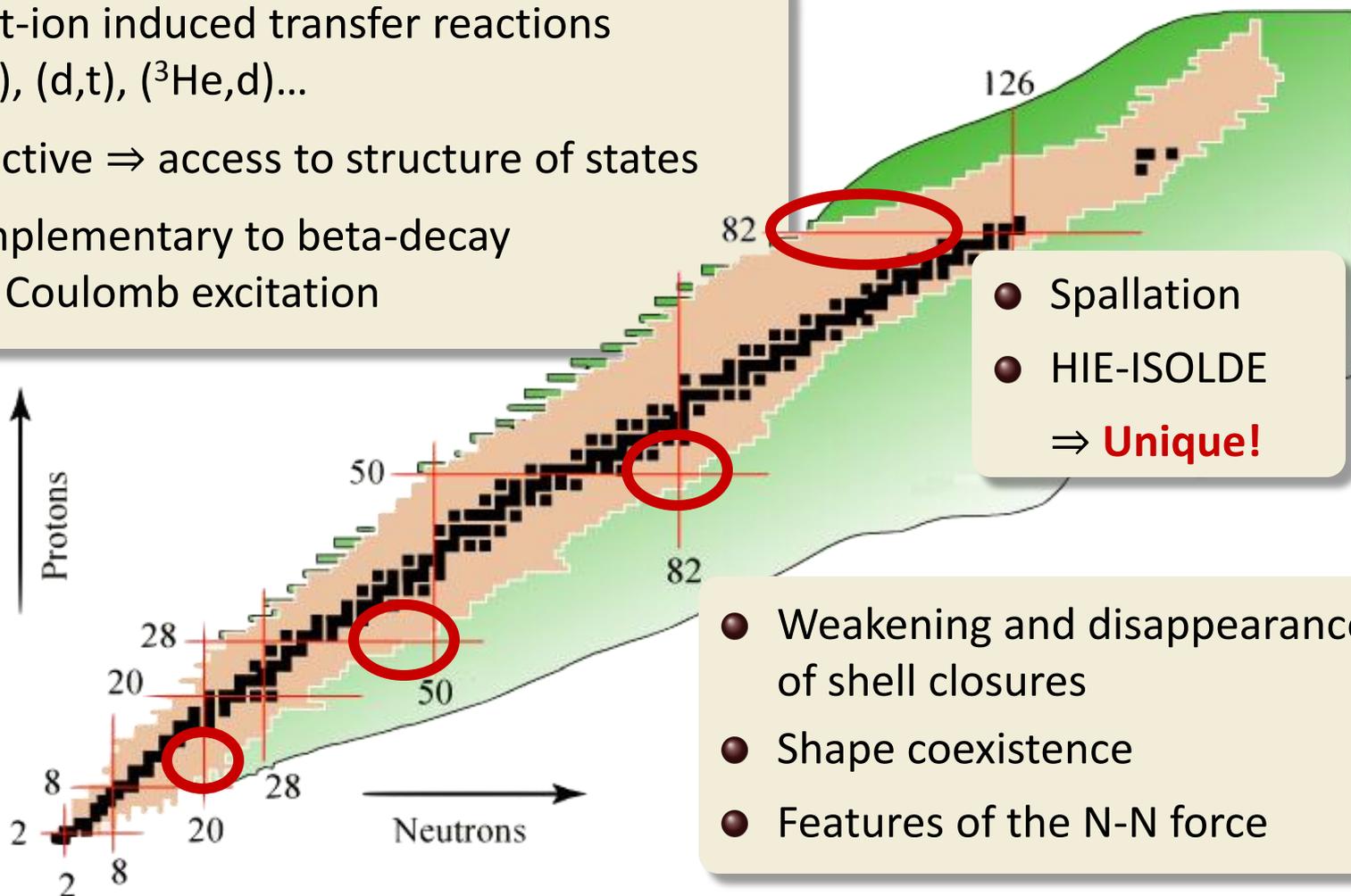- Shape coexistence
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- Spallation
- HIE-ISOLDE
- ⇒ **Unique!**

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Inverse kinematics, weak beams

- Solid targets: limit on thickness (resolution, thresholds)
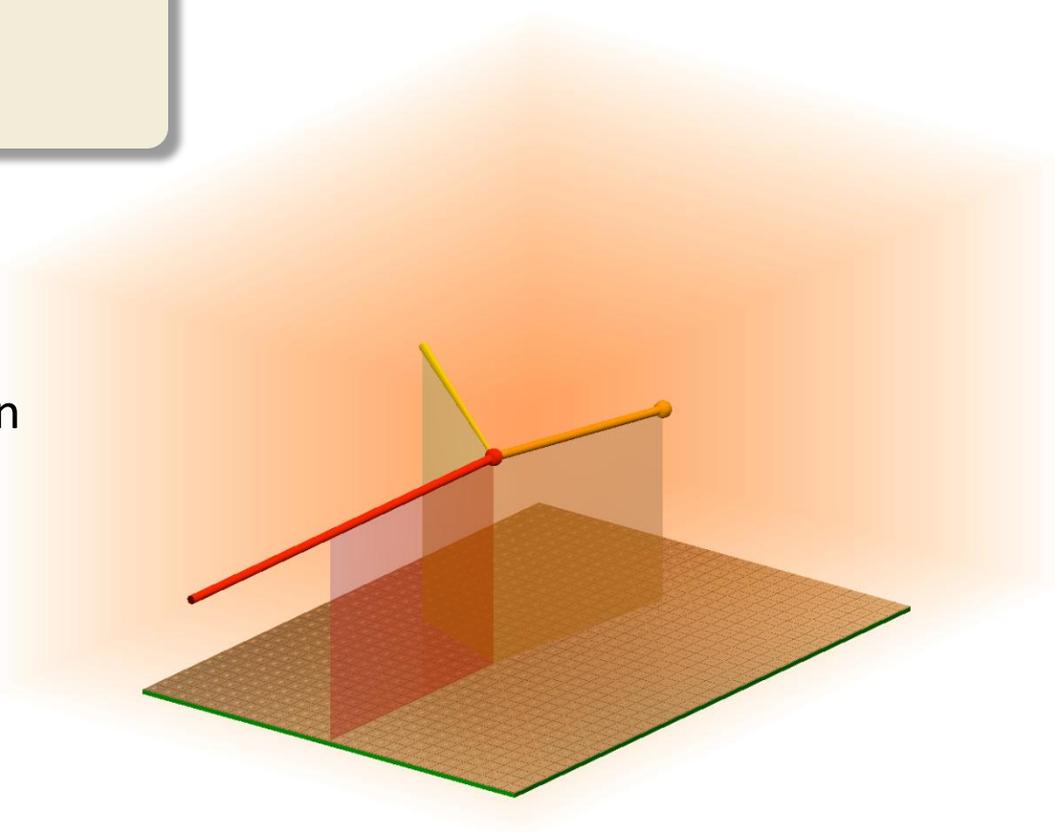
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Time-projection chamber

Nuclei of gas are the target

- Electron drift and amplification
  ⇒ tracking

- 10 to 100 times thicker than a solid target

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- Future: ACTAR

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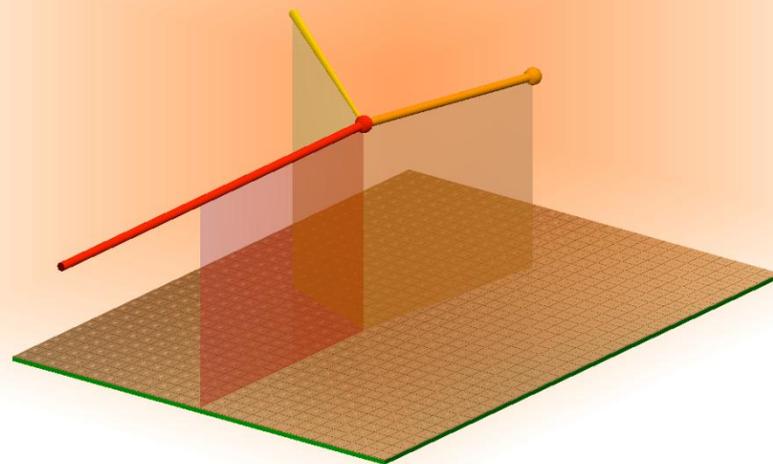- Solid targets: limit on thickness (resolution, thresholds)
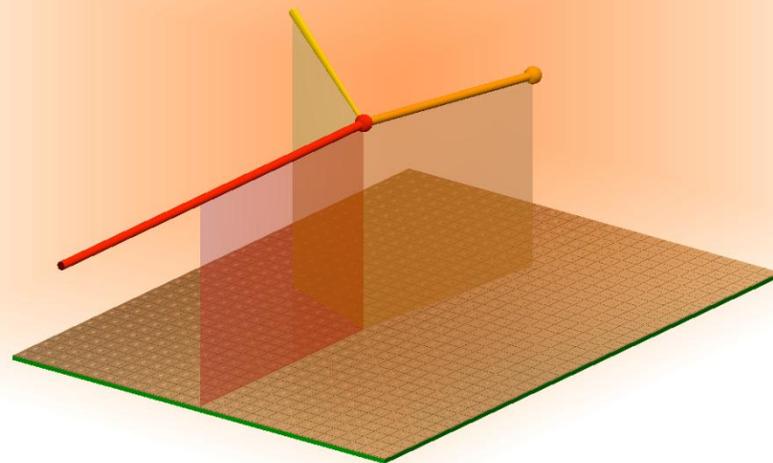
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Transfer reactions possible with the most exotic beams