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Determination of radioactive ion beam production yields using 1.4- and 1.7-GeV protons

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CERN-ISOLDE is among the world-leading isotope separation on-line (ISOL) facilities providing radioactive-ion beams (RIBs) for research. ISOLDE's versatility is driven by the 1.4-GeV proton beam delivered by the Proton Synchrotron Booster and its target and ion source repertoire. While a wide range of RIBs can be provided for physics experiments, user interest often focuses on more and more exotic isotopes that are challenging to deliver due to low production and/or low release efficiency from the target-ion source system. As a result, target and ion source development and facility upgrades for higher quality beams are required to increase the facility's capabilities and ensure its competitiveness. Past upgrades in proton beam energy proved to be valuable and experimental data suggests that gains in isotope production yields could be achieved by further energy increases. To validate the expected gain of such an upgrade, a campaign (IS716) to measure and compare RIB yields using 1.4- and 1.7-GeV protons was launched earlier this year at ISOLDE. In this contribution we will present the status of this campaign, highlight first experimental results and compare them to theoretical predictions.

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