

## New Tandetron Accelerator Laboratory at MTA Atomki, Debrecen: Multi-Purpose and Multi-User Facility

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In this work, we present in detail the Tandetron Laboratory of MTA Atomki. The particle accelerator system is based on a 2.0 MV Medium-Current Plus Tandetron Accelerator, which was manufactured by High Voltage Engineering Europa B.V. (HVEE). Initially, the system was equipped with a single source injector based on a Model 358 Duoplasmatron ion source producing proton beams. At the high energy side of the accelerator, a Switcher Magnet was connected directly after an electrostatic quadrupole triplet lens [1].

Recently, the facility was equipped with a high current, high brightness ion injection system based on Multicusp type ion sources (SO120 for Hydrogen, and SO130 for Helium). This laboratory extension is essential for the future nuclear (astro) physics users and nuclear micro/nanoprobe users. The duoplasmatron ion source was replaced with a Cs sputter type ion source. This new ion source will further enhance the availability and diversity of other species of MeV ion beams for research fields such as e.g. ion beam modification of materials.

The high energy side now features a new 90° analyzing magnet with a mass-energy product of 185 AMU.MeV/q<sup>2</sup> and a new system for beam energy stabilization. When using the new stabilization system, we expect that the beam energy stability will improve by a factor of 10 when compared to the previous GVM stabilization system. The switching magnet has been repositioned after the 90° analyzing magnet allowing for a vast extension with HE beamlines. The new facility layout is almost complete; the new ion sources and high-energy extension are now under commissioning.

[1] I. Rajta, et. al, NIM **A 880**, 125 (2018)