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The current status of the compact proton accelerator at KAHVE-Lab

The linear accelerator system of the Proton Testbeam at the Kandilli campus (known as the PTAK project) at Boğaziçi University is focused on constructing an experimental setup for Proton-Induced X-ray Emission (PIXE) analysis, aimed at elemental analysis of historical artifacts. A microwave ion source and a low-energy beam transfer (LEBT) section have already been built. Additionally, an 800 MHz Radio Frequency Quadrupole (RFQ) has been designed to accelerate the proton beam to 2 MeV energy within a distance shorter than one meter in KAHVE-Lab, Turkey. Furthermore, a prototype module of the four-vane RFQ has been produced and subjected to mechanical, vacuum, and electromagnetic tests to adjust pressure, EM field, and frequency parameters to the desired operational settings. This study introduces a general framework regarding the current status of the PTAK project and discusses ongoing commissioning studies.

Primary author: Dr KILICGEDIK, Atacan (KAHVELab)

Presenter: Dr KILICGEDIK, Atacan (KAHVELab)

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