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## Characterizations of a modified VD7 ion source

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In a Forced-Electron Beam Induced Arc-Discharge Ion Source (FEBIAD) ion source [1], at ISOLDE called VADIS (VD), electrons are produced by resistively heating a cathode up to 2000 °C. Afterwards, they are accelerated towards an anode volume, by passing through a grid biased to an adjustable voltage. Atoms within the anode volume can then be ionized by electron impact or plasma ionization. In a standard VADIS ion source, the grid is connected to the anode body [2,3], whereas in the modified ion source discussed in this poster, the grid is isolated, and a separate voltage can be applied. Additionally, another voltage difference can be applied to the cathode.

By having the possibility of applying different voltages across the ion source, including a difference between isolated grid and anode body, it is possible to investigate the ionization process taking place within the target in more detail. With the aim of studying ionization and dissociation processes in molecules, it will be possible to vary the grid voltage and to apply a voltage in the cathode, allowing a potential difference between the grid, anode body and cathode with respect to the extraction voltage. By studying the total and mass separated ion beam, as well as the electron drain current, it is possible to characterize the ionization processes and their efficiencies. This in turn allows us to investigate and test the production of a wider range of atomic and molecular species.

Here, we present the first results obtained from several tests performed on this target at the Offline 2 separator [4, 5] with this ion source.

### References:

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**Author:** PENA RODRIGUEZ, Yazareth

**Co-authors:** BOVIGNY, Mathieu (CERN); SCHUETT, Maximilian (CERN); AU, Mia; ROTHE, Sebastian (CERN); MARZARI, Stefano (CERN)

**Presenter:** PENA RODRIGUEZ, Yazareth

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