Contribution ID: **72** Type: **Poster**

Development of deuterium-deuterium compact neutron source

Tuesday, 9 September 2025 16:30 (1h 30m)

In the present work, we will present the status of the deuterium-deuterium (D-D) neutron source that is being developed in collaboration between the University of Granada and the University of the Basque Country (Spain).

Our neutron source consists of an ECR ion source, which accelerates a deuteron beam towards a deuterated target. The deuterium plasma ionization is achieved by radiating the cylindrical ECR plasma chamber with a magnetron 2.45 GHz signal and an 875 G magnetic field generated by 6 NdFeB magnets around the plasma chamber. Moreover, a cylindrical alumina RF window is used to keep the vacuum status from the ambient pressure condition inside the WR340 and help the plasma to ignite.
Once the plasma is generated, the deuterons are extracted from the plasma chamber using a Pierce electrode geometry and a system of electrostatic lenses, fixed to different negative potentials. The beam is accelerated towards a copper target disk with a deuterated titanium mesh fixed to -100 kV, which generates the desired neutron radiation.
There are several applications of D-D neutron sources across scientific and industrial domains. In case of the University of Granada and its deep relation with IFMIF-DONES neutron source, it is worth mentioning that we plan to carry out experiments for determining the cross-sections of relevant isotopes in the studies of IFMIF-DONES to a better simulation of the behaviour of such material under high neutron flux irradiation.

Primary author: PÉREZ SEGURA, Andoni

Co-authors: Dr ROLDÁN ARANDA, Andrés (University of Granada); Dr ARREDONDO, Iñigo (University of the Basque Country); Dr PRAENA RODRÍGUEZ, Javier (University of Granada); Dr PORTILLA, Joaquín (University of the Basque Country); Dr FEUCHTWANGER MORALES, Jorge (Ikerbasque); Dr ETXEBARRIA, Víctor

Presenter: PÉREZ SEGURA, Andoni

Session Classification: Poster Session

Track Classification: Applications of ion sources