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Progresses about Microwave Discharge Ion Sources for high intensity protons and light ions' beams production at INFN-LNS

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The diffusion of large-scale facilities based on high intensity linear accelerators for both fundamental or applied research has triggered the development of multi-mA proton/light ions sources. At INFN-LNS a great deal of work has been done on modelling, design and construction of several Microwave Discharge Ion Sources, according to the demands coming from different projects like TRASCO, ESS, Daeδalus, BNCT, etc.
The availability of advanced simulation tools, as well as the synergies with research groups working in the thermonuclear fusion field, allowed to figure out innovative solutions in terms of RF coupling, magnetic field design, mechanics, thus improving in a relevant way the performances and the overall reliability of the systems. An overview of the high intensity proton sources developed since end of Nineties will be given, with particular emphasis to the innovative design of the Proton Source for the European Spallation Source, now entering the commissioning phase at LNS, which is based on a versatile magnetic field system. A specific attention will be paid to modelling and diagnostics efforts, which allow a more advanced mastering of wave-to-plasma interaction and beam formation processes.

Summary

If a proceedings is prepared,
</br> will you submit a contribution?

No

Primary author(s) : GAMMINO, Santo (INFN-LNS)

Co-author(s) : MASCALI, David (INFN-LNS); SORBELLO, Gino (Dipartimento di Ingegnerie Elettrica ed Elettronica (UniCT)); CASTRO, Giuseppe (INFN-LNS); TORRISI, Giuseppe (INFN-LNS); NERI, Lorenzo (INFN-LNS); CELONA, Luigi Giuseppe (INFN-LNS); LEONARDI, Ornella (INFN-LNS)

Presenter(s) : GAMMINO, Santo (INFN-LNS)

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