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X-band accelerator structures: on going R&D at the LNF-INFN

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In the framework of a large collaboration among SLAC (USA), KEK (Japan) and INFN-LNF, our laboratories have been involved in the design, manufacture and test of short high power standing wave (SW) sections operating at 11.424 GHz. Because electroforming is a very attractive technique to manufacture compact structures avoiding the soft brazing while maintaining mechanical properties and high vacuum requirements, recently an electroformed SW structure has been realized. We report here the characterization of a hard high gradient RF accelerating structure at 11.424 GHz fabricated using the electroforming technique. Low-level RF measurements and high power RF tests carried out at the SLAC National Accelerator Laboratory are presented and discussed. In addition, based on the electroforming process we present also a possible layout where a water cooling of the irises has been considered for the first time.
Among other R&D activities, characterization and tests of molybdenum coatings are in progress.

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