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Activity Status at LNF-INFN on the high accelerating gradient

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To enhance the maximum gradient achievable with a normal-conducting RF powered structures for particle beam accelerators, an intense activity of design, simulations, characterization of materials, technologies, construction and experimental tests of linear accelerating structures at high power is going on at INFN-LNF since a decade. Several studies have been carried out on hard linear accelerating devices such as electroforming, soft bonding, electron beam welding manufactured devices, all methods alternative to the standard brazing in order to improve the electromagnetic properties of X band accelerating structures. In addition to build RF structures we also performed calculations on novel mode launchers for the next generation of photo-injectors, parallel coupling designs etc..
In this presentation we report the status of the RF activities at INFN-LNF from S-band to W-band of interest also for THz applications and recent results regarding new RF copper structures operated at cryogenic temperatures.

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