

## عنوان مقاله:

Dimensional analysis of high gradient RF cavity considering shrink-fit construction method

## محل انتشار:

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## خلاصه مقاله:

Advantage of non-brazing methods in manufacturing of cavities has been considered in high gradient studies because of the softening of copper by brazing cavities at high temperatures. Recent studies with hard copper cavities have been shown that the harder materials can reach larger accelerating gradients for the same breakdown rate. Shrinking, as a braze-free method for construction of the cavities, was used recently to fabricate and assemble acceleration cavities of an electron linear accelerator at the Institute for Research in Fundamental Science (IPM-Iran). Based on the results obtained in this project, this paper proposes the design of a 3-cell S-band standing wave structure operating at 2.9985 GHz for high gradient tests, considering shrink-fit construction method. The desired cavity consists of three cells so that the maximum gradient in the middle cell is about twice that of the surrounding cells. Simulation with Ansys-HFSS showed that maximum axial electric field  $59 \text{ MV.m}^{-1}$  achievable for 2 MW input power in middle cell.

## کلمات کلیدی:

High gradient linac, shrinking construction method, breakdown rate, RF design

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1305039>

