

Multipacting with space charge: stability and saturation of a non linear dynamic system

Tuesday 27 August 2024 16:00 (2 hours)

The phenomenon of multipacting happens when in an RF cavity or wave guide electrons, randomly generated on the surfaces mainly by secondary emission and accelerated by the RF field, find a periodic and stable condition able to sustain the discharge. It is particularly detrimental for long pulse operation as in high intensity hadron linacs. An original view point for the associated dynamical system is here developed, with focus on the definition of stability conditions and on the role of space charge in the saturation of the discharge intensity. Moreover in the case of a resonant cavity the electron “beam loading” effect is analyzed.

Footnotes

Funding Agency

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Session Classification: Tuesday Poster Session

Track Classification: MC1: Beam Dynamics, Extreme Beams, Sources and Beam-Related Technologies: MC1.1 Beam Dynamics, beam simulations, beam transport