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HOM mitigation

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Higher Order Modes (HOM) in accelerating structures are resonant electromagnetic fields excited and left behind by charged particle bunches. They can dramatically degrade the beam quality in accelerators, such as the multi-bunch energy spread and transverse emittance and therefore, one has to study and make them harmless carefully. In this lecture, various methods of HOM mitigation are reviewed. On one hand, one tries to avoid their existence, for example, by careful design of the accelerating structures and damping systems. On the other hand, one can reduce the effect of the excited HOM fields, for example, by means of fast feedback or beam alignment. Also, a few ways to make HOM signals useful are referred to, such as beam diagnostics or accelerating structures.

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