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SRF material R&D for FCCee: high-Q niobium and high-delta ceramic

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The goal of FCCee, high energy and luminosity collisions, imposes technical challenges to the SRF cryomodules. To cope with high current e^+/e^- beams with relatively high accelerating gradients, one needs to achieve an extremely high-quality factor in accelerating mode while efficiently damping other modes. The former can be achieved by niobium cavities with dedicated heat treatment and the latter can be achieved by employing special ceramic materials. In this presentation, we show the progress of studies on cavities and ceramics for FCCee and emphasize strong technical synergy with a local project PERLE at IJCLab.

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