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High frequency laminated metallic structures for particles radiation and acceleration

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The results of theoretical, numerical and experimental studies of two-layer metallic structures electro-dynamical properties are presented. For the low conductivity inner layer the longitudinal impedance has a narrow band resonance at high frequency when the inner layer thickness is smaller than the skin depth. The resonant frequency is determined by the tube radius and the inner layer thickness. The resonance is conditioned by the synchronous TM₀₁ fundamental mode, which forms the particle radiation and can support the particle acceleration. The spectrum measurements for the copper-germanium flat structure is presented and compared with theoretical predictions.

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