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Analytical formulae for the longitudinal impedance of two parallel layers with arbitrary complex permittivity and permeability

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We adopt the standard field matching technique to solve the general electromagnetic problem consisting of two parallel layers with arbitrary complex relative permittivity and permeability. Analytical formulae for the longitudinal impedance are discussed in the general case, and in the specific case of a two-layer system consisting of a metal-coated ceramic chamber. The solution of the electromagnetic problem allows also for the calculation of the power density deposited on the metal coating, thus permitting to address the important issue of the ceramic chamber beam-induced heating. The analysis is discussed with the parameters of the NSLS-II storage ring.

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Footnotes

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Yes

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