

# High concentration of electric fields occurring between perfect conductors

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When perfect conductors are closely located, the electric field, the gradient of the solution to a conductivity equation, can be arbitrarily large as the distance between two inclusions tends to zero. It is important to precisely characterize the blow-up of the gradient of such an equation. In this talk, we show that the blow-up of the gradient can be characterized by a singular function defined by the single layer potential of an eigenfunction corresponding to the eigenvalue  $\frac{1}{2}$  of a Neumann-Poincaré type operator, and we also review the recent progress on this subject.