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MONTE-CARLO AND DOMAIN-DEFORMATION SENSITIVITIES

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ABSTRACT. We address the question of evaluating shape derivatives of objective functions for radiative-transfer engineering involving semi-transparent media. After recalling the standard Monte-Carlo approach to sensitivity estimation and its current limitations, a new method is presented for the specific case of geometrical sensitivities. This method is then tested in a square cavity filled by a multiple-scattering and absorbing (non-emitting) semi-transparent medium, irradiated by an emissive cylinder. A new geometrical sensitivity algorithm is presented with full genericity in order to allow its future implementation in complex geometries.