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Giovanni S. Alberti* (alberti@dima.unige.it), Dipartimento di Matematica, Università di Genova, Via Dodecaneso 35, 16146 Genova, Italy. *Non-zero constraints in quantitative coupled physics imaging.*

The reconstruction in quantitative coupled physics imaging often requires that the solutions of certain PDEs, e.g. the conductivity equation, the Helmholtz equation or Maxwell's equations, satisfy certain non-zero constraints, such as the absence of critical points. From the mathematical point of view, it is then interesting to see whether one can construct suitable boundary values (the illuminations used to probe the object), possibly independently of the unknown coefficients, in such a way that the corresponding solutions satisfy the required properties. In this talk, I will discuss several techniques used for this aim, as well as some negative results. (Received August 30, 2018)