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**Wolfgang Reichel\*** ([wolfgang.reichel@kit.edu](mailto:wolfgang.reichel@kit.edu)), Institute for Analysis, Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany. *Characterization of balls by Coulomb/Newton-potentials and related stability questions.*

Consider the Newtonian potential of a body in  $\mathbb{R}^3$ . A result of L.E. Fraenkel says that if the body has constant density and if the potential of the body is constant on its boundary then necessarily the body is a ball. Similar characterizations hold not only for the three-dimensional Newtonian potential but quite generally for Riesz-potentials of convex bounded domains in  $\mathbb{R}^n$  and also for Coulomb potential concentrated on the boundary of a sufficiently regular  $n$ -dimensional body.

We also consider the stability of Fraenkel's result with respect to perturbations of the density. If the density is close to constant and if the potential is constant on the boundary of the body then we deduce that the body is almost a ball. In fact the proximity of the body to a ball can be quantified. (Received August 10, 2013)