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ON POISSON-DIRICHLET PROBLEMS WITH POLYNOMIAL DATA

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Abstract

In this note we provide a probabilistic proof that Poisson and/or Dirichlet problems in an ellipsoid in $\mathbb{R}^d$, that have polynomial data, also have polynomial solutions. Our proofs use basic stochastic calculus. The existing proofs are based on famous lemma by E. Fisher which we do not use, and present a simple martingale proof of it as well.

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