

## FUNDAMENTAL MATRICES AND GREEN MATRICES FOR NON-HOMOGENEOUS ELLIPTIC SYSTEMS

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**Abstract:** In this paper, we establish existence, uniqueness, and scale-invariant estimates for fundamental solutions of non-homogeneous second order elliptic systems with bounded measurable coefficients in  $\mathbb{R}^n$  and for the corresponding Green functions in arbitrary open sets. We impose certain non-homogeneous versions of de Giorgi–Nash–Moser bounds on the weak solutions and investigate in detail the assumptions on the lower order terms sufficient to guarantee such conditions. Our results, in particular, establish the existence and fundamental estimates for the Green functions associated to the Schrödinger  $(-\Delta + V)$  and generalized Schrödinger  $(-\operatorname{div} A\nabla + V)$  operators with real and complex coefficients, on arbitrary domains.

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**Key words:** Fundamental solution, Green function, elliptic equations, Schrödinger operator.