What we know about square roots of elliptic systems – and a bit more!

Sebastian Bechtel (Université Paris-Saclay, France)

In my talk we consider elliptic systems in divergence form, potentially perturbed by a multiplicative perturbation from the left, with measurable, elliptic coefficients. I will first explain why we should care for non-smooth coefficients and why they are difficult to treat. Afterwards, we will turn our focus to elliptic systems that are defined in rough domains and subject to mixed boundary conditions, I will introduce our geometric framework by virtue of examples and present which positive results we can obtain in this scope, both L^2 theory and (the optimal range of) L^p theory. Finally, I will conclude with some open questions (and what we expect to obtain for them).