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Sommario/riassunto

Since long over the decades there has been a large transversal community of mathematicians grappling with the sophisticated challenges of the rigorous modelling and the spectral and scattering analysis of quantum systems of particles subject to an interaction so much localised to be considered with zero range. Such a community is experiencing fruitful and inspiring exchanges with experimental and theoretical physicists. This volume reflects such spirit, with a diverse range of original contributions by experts, presenting an up-to-date collection of most relevant results and challenging open problems. It has been conceived with the deliberate two-fold purpose of serving as an updated reference for recent results, mathematical tools, and the vast related literature on the one hand, and as a bridge towards several key open problems that will surely form the forthcoming research agenda in this field.