“Relativity Throughout the Periodic Table: Scalar Relativity, Spin-Orbit Coupling, and Spin-Vibronic Interaction”

Special relativity plays an important role in heavy-element chemistry and is also relevant to calculations of light elements when aiming at high accuracy [1]. This presentation is focused on recent developments of relativistic quantum chemistry [2]. The applicability of relativistic quantum-chemical methods presented here is demonstrated with example applications, including vibronic branching ratios in lasercoolable molecules [3], x-ray spectroscopy involving elements across the periodic table [4], and spectra for molecules containing early actinides as examples for elements in the far reaches of the periodic table [5].