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exciting NEWS

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Linearized augmented planewave (LAPW) methods are known to be the gold standard for solving the Kohn-Sham equations of density-functional theory (DFT). The all-electron full-potential computer package exciting [1] implements LAPW basis sets that allow for reaching microhartree precision in DFT calculations [2] and providing benchmark results also in many-body perturbation theory (MBPT). The latter comprise, in particular, the GW approach for obtaining the quasi-particle band structure [3] and the Bethe-Salpeter equation for treating optical [4] and core-level spectra [5]. I will provide a review of this method, discussing benefits and challenges, and will introduce the latest developments and implementations. They concern, for example, resonant inelastic x-ray scattering (RIXS) [6], real-time TDDFT [7], various hybrid functionals [8], Ehrenfest molecular dynamics [9], and many others.

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