

2.7 ViennaWD - Status and Outlook

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We will present the current state of the Wigner Monte Carlo quantum transport simulator shipped with the free open source software package ViennaWD. The underlying Wigner transport model based on signed particles will be briefly introduced and compared to the alternative affinity approach. The applied spatial domain decomposition-based parallelization approach, which drastically reduces simulation time, is discussed. Additional simulator features, such as usability and supported output quantities, will be described. The future road map will be laid out, focusing on self-consistency, load-balanced parallelization approaches, and the use of modern large-scale computing platforms. The current computational and numerical challenges will be presented. A discussion regarding missing features or feature prioritization will be triggered to tune the future research and Wigner model development road map.