Effect of Electron-Phonon Interaction Range for a Half-Filled Band in One Dimension MARTIN HOHENADLER, University of Würzburg, FAKHER ASSAAD, University of Wüzburg, HOLGER FEHSKE, University of Greifswald — We demonstrate that fermion-boson models with nonlocal interactions can be simulated at finite band filling with the continuous-time quantum Monte Carlo method. We apply this method to explore the influence of the electron-phonon interaction range for a half-filled band in one dimension, covering the full range from the Holstein to the Fröhlich regime. The phase diagram contains metallic, Peierls, and phase-separated regions. Nonlocal interactions suppress the Peierls instability, and thereby lead to almost degenerate power-law exponents for charge and pairing correlations.

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