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Pinning of topological solitons at extrinsic defects in a quasi one-dimensional charge density wave SAMAD RAZZAQ, STEFAN WIPPERMANN, Max Planck Inst fuer Eisenforschung GmbH, TAE HWAN KIM COLLABORATION, HAN WOONG YEOM COLLABORATION — Quasi one-dimensional (1D) electronic systems are known to exhibit exotic physical phenomena, such as, e.g., Jahn Teller distortions, charge density wave (CDW) formation and non-Fermi liquid behavior. Solitonic excitations of the charge density wave ordered ground state and associated topological edge states in atomic wires are presently the focus of increasing attention. We carried out a combined *ab initio* and scanning tunneling microscopy (STM) study of solitonic and non-solitonic phase defects in the In/Si(111) atomic wire array. While free solitons move too fast to be imaged directly in STM, they can become trapped at extrinsic de- fects within the wire. We discuss the detailed atomistic structure of the responsible extrinsic defects and trapped solitons. Our study highlights the key role of coupled theory-experimental investigations in order to understand also the elusive fast moving solitons. S. W. gratefully acknowledges financial support from the German Research Foundation (DFG), grant No. FOR1700.

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