Valence-bond-solid domain walls in a 2D quantum magnet\textsuperscript{1} HUI SHAO, Beijing Computational Science Research Center, WENAN GUO, Beijing Normal University, ANDERS SANDVIK, Boston University — sing quantum Monte Carlo simulations, we study properties of domain walls in a square-lattice S=1/2 Heisenberg model with additional interactions which can drive the system from an antiferromagnetic (AFM) ground state to a valence-bond solid (VBS). We study the finite-size scaling of the domain-wall energy at the putative ”deconfined” critical AFM-VBS point, which gives access to the critical exponent governing the domain-wall width. This length-scale diverges faster than the correlation length and also is related to the scale of spinon deconfinement. Our results show additional evidence of deconfined quantum criticality and are compatible with critical exponents extracted from finite-size scaling of other quantities.

\textsuperscript{1}NSFC Grant No. 11175018, NSF Grant No. DMR-1410126