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Tunable magnetic coupler for a superconducting adiabatic quantum computer ANDREW BERKLEY, PAUL BUNYK, SERGEI GOVORKOV, MARK W. JOHNSON, MURRAY THOM, BROCK WILSON, D-Wave Systems Inc. Burnaby, BC Canada — We report on measurements of a superconducting sign-tunable magnetic coupling element. This device could be used as part of a programmable adiabatic quantum computer utilizing flux qubits. The sign-tunability is achieved by mediating the coupling between two flux qubits through a third rf SQUID device [1]. We are able to tune the resulting coupling from antiferromagnetic through zero to ferromagnetic. [1] A. Maassen van den Brink, A. J. Berkley, M. Yalowsky, New J. Phys. 7 230 (2005).

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