Abstract Submitted
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A fully programmable 100-spin coherent Ising machine with all-to-all connections[1] PETER MCMAHON, ALIREZA MARANDI, Stanford University, YOSHITAKA HARIBARA, University of Tokyo, RYAN HAMERLY, National Institute of Informatics, CARSTEN LANGROCK, Stanford University, SHUHEI TAMATE, National Institute of Informatics, TAKAHIRO INAGAKI, HIROKI TAKESUE, NTT, SHOKO UTSUNOMIYA, National Institute of Informatics, KAZUYUKI AIHARA, University of Tokyo, ROBERT BYER, MARTIN FEJER, HIDEO MABUCHI, YOSHIHISA YAMAMOTO, Stanford University — We present a scalable optical processor with electronic feedback, based on networks of optical parametric oscillators. The design of our machine is inspired by adiabatic quantum computers, although it is not an AQC itself. Our prototype machine is able to find exact solutions of, or sample good approximate solutions to, a variety of hard instances of Ising problems with up to 100 spins and 10,000 spin-spin connections. Reference: P.L. McMahon, A. Marandi, et al. Science 354, No. 6312, pp. 614-617 (2016).

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