

## Phase-coherent heat circulator based on multiterminal Josephson junctions

Sun-Yong Hwang<sup>a</sup>, Francesco Giazotto<sup>b</sup>, and Björn Sothmann<sup>a</sup>

<sup>a</sup>Theoretische Physik, Universität Duisburg-Essen and CENIDE, D-47048 Duisburg, Germany

<sup>b</sup>NEST, Istituto Nanoscienze-CNR and Scuola Normale Superiore, Piazza San Silvestro 12, 56127 Pisa, Italy

We propose a phase-coherent thermal circulator based on ballistic multiterminal Josephson junctions. The breaking of time-reversal symmetry by either a magnetic flux or a superconducting phase bias allows heat to flow preferentially in one direction from one terminal to the next while heat flow in the opposite direction is suppressed. We find that our device can achieve a high circulation efficiency over a wide range of parameters and that its performance is robust with respect to the presence of disorder.