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**Supercurrent survival under Rosen-Zener quench of hard core bosons** ISRAEL KLICH, Physics Department, California Institute of Technology, COURTNEY LANNERT, Physics Department, Wellesley College, GIL REFAEL, Physics Department, California Institute of Technology — We study the survival of super-currents in a system of impenetrable bosons subject to a quantum quench from its critical superfluid phase to an insulating phase. We show that the evolution of the current when the quench follows a Rosen-Zener profile is exactly solvable. This allows us to analyze a quench of arbitrary rate, from a sudden destruction of the superfluid to a slow opening of a gap. The decay and oscillations of the current are analytically derived, and studied numerically along with the momentum distribution after the quench. In the case of small supercurrent boosts  $\nu$ , we find that the current surviving at long times is proportional to  $\nu^3$

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