

Abstract Submitted  
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**Possible neutrino signature of hadron-quark phase transition in failing core-collapse supernovae**<sup>1</sup> SHUAI ZHA, EVAN O'CONNOR, ANDR SCHNEIDER, Stockholm Univ — We study the consequence of a hadron-quark phase transition in failing core-collapse supernovae, which give birth to stellar-mass black holes. In models with a range of progenitor compactness, the protoneutron star collapses and bounces for a second time due to the phase transition. However, this second bounce cannot revive the supernova shock. Instead, the protoneutron star oscillates with the excess kinetic energy and emits a train of neutrino pulses with a period of  $\sim$ ms. Black-hole formation takes place in a third collapse. The periodic neutrino signal can be a strong indicator for the hadron-quark phase transition in failing core-collapse supernovae if detected in the future.

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