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## BEC Analog Black Holes With Massive Phonons

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The original Bose Einstein Condensate, BEC, black hole analog models and the experiments to date have been for BECs which are effectively one-dimensional and for which the mode functions have only longitudinal excitations. In this case, the corresponding phonons are massless. However, it is possible to have situations in which one or more transverse modes are excited with the result that a masslike term appears in the mode equation that is still effectively 1+1 dimensional. Thus, the phonons acquire a mass. It is shown that the presence of a mass term in the mode equation has profound effects on both the two-point function and the density density correlation function for a BEC analog black hole.

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