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In-Medium Effects and HBT “Fireball” Size in Ultrarelativistic Heavy-Ion Collisions LANIECE MILLER, Clarkson University & Texas A&M University, RALF RAPP, HENDRIK VAN HEES, Texas A&M University — Standard equations of HBT interferometry determining the size of a fireball formed in heavy-ion collisions at RHIC do not easily match with experimental data. In a recent paper, G. A. Miller et al. have added an in-medium pion optical potential to help correct this discrepancy, resulting in a rather dense freeze-out configuration within their calculations. In the present project we investigate the effects of a more elaborate in-medium pion potential that more closely reflects the conditions expected for a fireball resulting from Au-Au collisions at RHIC. Modifying the potential alters the pion wave function, which in turn changes the HBT correlation. A computer code must be developed to handle the calculational complexities of both the pion wave equation and correlation function. The primary objective of this project is to determine the form and constants of an in-medium pion potential in connection with fireball conditions which more closely parallel the expected freezeout properties in heavy-ion collisions.

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