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A modified thermodynamic model to estimating the secondary particle source radius, and coalescence radius, in heavy ion collisions
MAHMOUD POURARSALAN, LAWRENCE TOWNSEND, The University of Tennessee, Knoxville — In an abrasion-ablation model of high energy heavy ion collisions as the extremely hot and dense participating region expands, and cools off, light high energy particles are emitted in the sphere regions where the relative momentum of the nucleons is less than the coalescence radius in momentum space. The probability of the light particle emission and the source radius of the region emitting these light particles may be related with a thermodynamic coalescence models. At the high beam energies, the Coulomb repulsion does not effect our thermodynamic coalescence model estimates, how ever at energies below 25 MeV/nucleon, the Coulomb repulsion must be considered. The objective of our study is to estimate the emitting source radius and the coalescence radius at beam energies less than 25 MeV/Nucleon by using a modified thermodynamic coalescence model which includes Coulomb repulsion. The coalescence radius is inversely proportional to the emitting source radius. Emitting source radii and coalescence radii for light energetic particles from many sets systems are estimated for both symmetric and asymmetric systems.

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