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Determining the total yield of alpha-capture reaction products from measurements in a limited sample of charge ELIZABETH ALTERS, JERRY HINNEFIELD, Indiana University South Bend, CHRIS SEYMOUR, LUIS MORALES, MANOEL COUDER, University of Notre Dame — The St. George recoil separator at the University of Notre Dame is devoted to studying alpha-capture reactions produced by a heavy beam using inverse kinematics. This method, as opposed to the standard light beam method, reverses the kinematics of the reaction by accelerating the heavy element while using the lighter Helium as the target. St. George transports the recoiling reaction products into the detection system, while simultaneously rejecting the beam particles that do not interact with the target. In order to determine the total reaction yield from the most abundant charge states, the charge state distribution of the reaction products emerging from the helium gas target must be ascertained. The program ETACHA has been used to calculate charge state distributions for 20Ne projectiles and 24Mg products passing through the helium gas target, and these calculations were combined to determine the expected distribution of charge states of detected 24Mg reaction products.

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