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Measuring the radiative width of the Hoyle state JASON BURKE, LLNL, STARS/LIBERACE COLLABORATION — A key rate that governs energy generation in stars is the triple alpha rate. The ratio of the radiative width to the total width of the Hoyle state represents the probability that a ^{12}C nucleus will be formed when three alpha particles fuse together in a stellar environment. Measurements of the ratio of the radiative width to total width using an alpha particle scattering technique developed in the 1960's have been made several times. Using this technique the Hoyle state is excited via inelastic nuclear scattering and the scattered alpha particles and recoiling ^{12}C nuclei are detected in coincidence. We have improved on this technique by using a large area highly segmented silicon detector array called STARS. During a five day run we accumulated 1500 alpha-^{12}C recoil coincident events over an angle range from 40 to 55 degrees in 1 degree steps. The experimental results including statistical and systematic uncertainty analysis will be presented. This work was performed under the auspices of the U.S. Department of Energy under contract numbers DE-AC52-07NA27344 (LLNL), DE-AC02-05CH11231 (LBNL) and DE-FG52-06NA26206 (UR).

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