

Abstract Submitted  
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**Determination of the radiative neutron capture rate on  $^{14}\text{C}$  via indirect methods**<sup>1</sup> MATTHEW MCCLESKEY, A.M. MUKHAMEDZHANOV, R.E. TRIBBLE, E. SIMMONS, A. SPIRIDON, A. BANU, B. ROEDER, V. GOLDBERG, L. TRACHE, X.F. CHEN, Y.-W. LUI, Cyclotron Institute, Texas A&M University —  $^{14}\text{C}(n,\gamma)^{15}\text{C}$  is being used as a test case in the development of an indirect method to determine neutron capture cross sections on neutron-rich unstable nuclei at astrophysical energies. Our approach combines information about the peripheral component of the reaction (ANC) with information from the interior contribution (spectroscopic factor). The ANC for  $^{15}\text{C}$  has been determined using HI neutron transfer with a 12 MeV/nucleon  $^{14}\text{C}$  beam on a  $^{13}\text{C}$  thin foil target. The spectroscopic factor will be determined using  $^{14}\text{C}(d,p)$  in forward kinematics with a incident deuteron energy of about 60 MeV. Both experiments were done with the high-resolution MDM spectrometer of Texas A&M University.

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