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DANCE (Detector for Advanced Neutron Capture Experiments) is a 4π array of BaF_2 crystals installed at LANSCE, Lujan Center. Neutron capture measurements on ^{157}Gd and ^{89}Y nuclei were conducted using this facility. A. CHYZH, NCSU, LANL, G. MITCHELL, NCSU, TUNL, D. VIEIRA, T. BREDEWEG, J. ULLMANN, M. JANDEL, A. COUTURE, A. KEKSIS, R. RUNDBERG, J. WILHELMY, J. O'DONNELL, B. BARAMSAI, R. HAIGHT, J. WOUTERS, LANL, M. KRTICKA, Charles University, Prague, W. PARKER, J. BECKER, LLNL, U. AGVAANLUSAN, Stanford University, DANCE COLLABORATION — DANCE (Detector for Advanced Neutron Capture Experiments) is a 4π array of BaF_2 crystals installed at LANSCE, Lujan Center. Neutron capture measurements on ^{157}Gd and ^{89}Y nuclei were conducted using this facility. The absolute cross sections of the $^{89}\text{Y}(n, \gamma)$ reaction was measured for the first time ever in the neutron energy range of 10 eV – 10 keV and improvements were made in the 10 – 300 keV range. The error bars were significantly reduced and number of cross section points was increased since the past $^{89}\text{Y}(n, \gamma)$ experiments. The $^{157}\text{Gd}(n, \gamma)$ cross section was determined at $E_n = 20 \text{ eV} - 300 \text{ keV}$ by normalizing the experimental DANCE data to a well known resonance taken from the ENDF/B-VII library. Computer simulations of the $^{157}\text{Gd}(n, \gamma)$ cascades and DANCE pulse height function were made using DICEBOX and GEANT4 codes and simulated E_{sum} and E_γ spectra are compared to the experimental DANCE data. Values of spin and photon strength function (PSF) of the $^{157}\text{Gd}(n, \gamma)$ resonances are provided in the range of $E_n = 2 - 300 \text{ eV}$ using spin dependence upon a γ -ray multiplicity.

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