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Neutron-Neutron Scattering Length Determinations Using nd Breakup in Different Nucleon Detection Geometries[1] C.R. HOWELL, A.S. CROWELL, J. DENG, J.H. ESTERLINE, M.R. KISER, R.A. MACRI, S. TAJIMA, W. TORNOW, Duke Univ. and TUNL, B.J. CROWE III, NC Central Univ., R.S. PEDRONI, NC A&T State Univ., W. VON WITSCH, Univ. of Bonn, H. WITAŁA, Jagellonian Univ. — Significant differences in the value for the $^1S_0$ neutron-neutron (nn) scattering length(a_{nn}) have been obtained with neutron-deuteron (nd) breakup measurements made using different detection geometries [1,2]. We report the results of a new determination of a_{nn} made using the nd breakup reaction in recoil proton geometry. The measurements were made at the Triangle Universities Nuclear Laboratory (TUNL) with a neutron beam energy of 19.0 MeV. The momenta of the recoil proton and one of the outgoing neutrons were measured at mean angles of $\theta_p = 45.0^\circ$ and $\theta_n = 52.1^\circ$, respectively. Details of the experiment and analysis will be presented, and results will be discussed.

[1] D.E. Gonálex Trotter *et al.*, Phys. Rev. C **73**, 034001 (2006).
[2] V. Huhn *et al.*, Phys. Rev. Lett. **85**, 1190 (2000).

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