# A measurement of two-halo neutron transfer reactions and the correlation of halo neutrons

I. Tanihata, M. Alcorta, D. Bandyopadhyay, R. Bieri, L. Buchmann, B. Davids, N. Galinski, D. Howell, W. Mills, R. Openshaw, E. Padilla-Rodal, G. Ruprecht, G. Sheffer, A. C. Shotter, S. Mythili, M. Trinczek, and P. Walden,
TRIUMF, 4004 Wesbrook Mall, Vancouver, BC, V6T 2A3, Canada

H. Savajols, T. Roger, M. Caamano, W. Mittig, and P. Roussel-Chomaz,
GANIL, Bd Henri Becquerel, BP 55027, 14076 Caen Cedex 05, France

R. Kanungo and A. Gallant,
Saint Mary's University, 923 Robie St., Halifax, Nova Scotia B3H 3C3, Canada

M.Notani and G. Savard,
ANL, 9700 S. Cass Ave., Argonne, IL 60439, USA

I. J. Thompson,
LLNL, L-414, P.O. Box 808, Livermore CA 94551, USA

The p($^{11}$Li,$^{9}$Li)t reaction has been studied for the first time at an incident energy of 3*A* MeV delivered by the new ISAC-2 facility at TRIUMF. An active target detector MAYA, build at GANIL, was used for the measurement. The differential cross sections have been determined for transitions to the $^{9}$Li ground and the first excited states in a wide range of scattering angles. Multistep transfer calculations using different $^{11}$Li model wave functions, shows that wave functions with strong correlations between the halo neutrons are the most successful in reproducing the observation.