Gamow-Teller Transitions Starting from $T_z = +3/2$ Nucleus ^{47}Ti

E. Ganioğlu[1], H. Fujita[2], Y. Fujita[2],T. Adachi[3], A. Algora[4], M. Csatlos[5], J. Deaven[6], E. Estevez[4], C. Guess[6], J. Gulyás[5], K. Hatanaka[3], K. Hirota[3], D. Ishikawa[3], A. Krasznahorkay[5], H. Matsubara[3], R. Meharchand[6], F. Molina[4], H. Okamura[3], Y. Oktem[1], H.J. Ong[3], G. Perdikakis[6], B. Rubio[4], C. Scholl[7], G. Susoy[1], T. Suzuki[3], A. Tamii[3], J. Thies[8], R.G.T. Zegers[6], J. Zenihiro[3]

[1]*Department of Physics, Istanbul University, Istanbul 34134, Turkey*
[2]*Department of Physics, Osaka University, Toyonaka, Osaka 560-0043, Japan*
[3]*Research Center for Nuclear Physics, Osaka University, Ibaraki, Osaka 567-0047, Japan*
[4]*Instituto de Física Corpuscular, CSIC-Universidad de Valencia, E-46071 Valencia, Spain*
[5]*Institute of Nuclear Research of the Hungarian Academy of Sciences P.O.Box 51, H-4001 Debrecen, Hungary*
[6]*NSCL, Michigan State University, East Lansing, Michigan 48824-1321, USA*
[7]*Institut für Kernphysik, Universität zu Köln, 50937 Köln, Germany*
[8]*Institut für Kernphysik, Westfälische Wilhelms-Universität, D-48149 Münster, Germany*

Gamow-Teller (GT) transition, caused by the $\sigma\tau$-type interaction, is the most popular weak process in nuclei. It is of interest not only in nuclear physics, but also in astrophysics. A high energy-resolution (^{3}He,t) experiment at Reseach Center for Nuclear Physics (RCNP), Osaka [1-4] was performed on the $T_z = +3/2$ nucleus ^{47}Ti at 0° and at an intermediate incident energy of 140 MeV/nucleon in order to study the precise GT transition strengths to the final $T_z = +1/2$ nucleus ^{47}V. Owing to the energy resolution of 20 keV achieved in the ^{47}V spectrum, individual GT transitions were observed [5]. It is known that the strength of each of these transitions is proportional to the GT transition strength B(GT) in the (^{3}He,t) reaction[6]. Since the "standard B(GT) value" was available from the β decay study of ^{47}V, B(GT) values were reliably derived up to higher excitations.

[1] T. Adachi *et al.*, Phys. Rev. C **73**, 024311 (2006).
[2] Y. Fujita, *et al.*, Phys. Rev. Lett. **95**, 212501 (2005).
[3] H. Fujita *et al.*, Phys. Rev. C **75**, 034310 (2007).
[4] L. Popescu *et al.*, Phys. Rev. C **79**, 064312 (2009).
[5] http://www.rcnp.osaka-u.ac.jp
[6] Y. Fujita, *et al.*, Phys. Rev. C **75**, 057305 (2007).