Systematic measurement of *pd* breakup cross section around Space Star

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Space Star anomaly in *nd* breakup cross section at E=13 MeV and 10.3 MeV was first reported in 1989 [1]. In Star configuration, three outgoing nucleons in the final state are perpendicular to the beam axis and form an equilateral triangle. After a reliable calculation of *pd* breakup had become available [2], we started systematic measurements of *pd* breakup Star cross section at E/A= 9.5MeV and 13MeV.

Space Star anomaly is curious phenomenon and candidates for its origin(s) have not been suggested so far. Effects of $\pi\pi$3NF are small at this low energy and S-wave interaction between 2N has been well established at this energy. there is no space for sizable modification.

We have made two systematic measurements to investigate the perpendicular condition and the equilateral-triangle condition of Space Star anomaly. After accumulating experimental data and comparing the data with *pd* calculations, we found (1) experimental *pd* breakup cross sections at Space Star at E/A= 9.5MeV and 13MeV are about 6% and 9% lower than *pd* calculations respectively, and (2) the anomaly gradually becomes small when the perpendicular condition or the equilateral-triangle condition becomes unsatisfied.

Points (1) and (2) indicate that Space Star anomaly in *pd* breakup may be caused by a slight origin and its effects are seen in rather wide area of kinematic configuration around Space Star. These suggestions are helpful to find the origin.

Another indication for the origin may be obtained from energy dependence of Space Star anomaly. We are thinking to make such experiments.

[1] J.Strate *et al.*, Phys. A**501**, 51(1989)

[2] A.Deltuva *et al.*, Phys.Rev. C **72** 054004(2005)

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