

Abstract Submitted
for the NWS12 Meeting of
The American Physical Society

Reactor neutrino anomaly and sterile neutrinos revisited ANNIKA LENNARZ, WWU Muenster and TRIUMF Vancouver, MUENSTER/RCNP/KVI/ISTANBUL/BRATISLAVA/NSCL-MSU/UW-SEATTLE/TITAN-VANCOUVER/INR-MOSCOW COLLABORATION — In this contribution we will present results from two separate experiments dealing with the neutrino response on ^{71}Ga . Both experiments provide input to the calibration of the SAGE and GALLEX solar neutrino detectors and address a long-standing discrepancy between the measured and evaluated capture rates from the ^{51}Cr and ^{37}Ar neutrino calibration sources. The first is a $^{71}\text{Ga}(^3\text{He},t)^{71}\text{Ge}$ charge-exchange experiment performed at RCNP, Osaka, which allows to extract with high precision the Gamow-Teller transition strengths to the three lowest-lying states in ^{71}Ge , i.e., the ground state ($1/2^-$), the 175 ($5/2^-$) and the 500 keV ($3/2^-$) excited states. These are the states, which are populated via a charged-current reaction induced by neutrinos from reactor produced ^{51}Cr and ^{37}Ar sources. In the second part we present a new precision Q-value measurement for the $^{71}\text{Ga}(\nu, e)^{71}\text{Ge}$ reaction using the TITAN mass measurement facility at TRIUMF. From the results of the two experiments we now conclude that there are no further unknowns in the nuclear structure, which could remove the persistent discrepancy in the SAGE and GALLEX calibration measurement performed with neutrinos from ^{51}Cr and ^{37}Ar sources.

Annika Lennarz
WWU Muenster and TRIUMF Vancouver

Date submitted: 25 Sep 2012

Electronic form version 1.4