Study of nucleosynthesis by means of $^{45}$Sc+$p$ reaction


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$^{45}$Sc is known as a “bottleneck” in silicon burning which the final stage of nucleosynthesis in stars. However, there are few experimental data on reaction rate with $^{45}$Sc. The reaction flow is concentrated in the $^{42}$Ca($\alpha$,p)$^{45}$Sc and $^{45}$Sc(p,$\gamma$)$^{46}$Ti reactions. Especially, we focused on $^{42}$Ca($\alpha$,p)$^{45}$Sc. In order to evaluate reaction rate of $^{42}$Ca($\alpha$,p)$^{45}$Sc, we have performed measurements of cross section for the inverse reaction of $^{45}$Sc(p,$\alpha$)$^{42}$Ca($Q=2.34$MeV). For this reaction, the experimental data were limited only above $E_p=2$MeV[1]. We measured cross section in lower energy region and report our results.


This figure show an E-$\Delta$E matrix with particle identification.