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# Cross section measurement of the $^{nat}$W(p,X) reactions by an activation method/放射化法を用いた$^{nat}$W(p,X) 反応断面積測定

*Thursday, 14 November 2024 16:00 (2 hours)*

Tungsten is applied to a target at proton accelerator facilities, e.g., ESS and COMET (J-PARC). Additionally, tungsten is used as a shielding material, such as the ADS facility by JAEA [1]. Thus, activation of tungsten by high-energy protons receives attention because residual $\gamma$-ray dose rate has impact on a maintenance schedule. To derive the dose rate, nuclide production cross section is required. Although there are previous studies of the $^{nat}$W(p,X) reactions [2,3], there remain nuclides which have not measured yet. Also, nuclear reaction models can predict the nuclide production cross sections. However, the prediction accuracy is not fully understood currently. Hence, further measurement of the reactions in question should be performed. Then, we did an activation experiment of the $^{nat}$W(p,X) reactions with GeV-energy proton incidence (0.4, 1.3, 2.2, and 3.0 GeV) at J-PARC following the same manner in Ref. [4].
As a result, a total of 140 nuclides via the $^{nat}$W(p,X) reactions were acquired. In this poster, some of the results are presented. According to the average C/E values for obtained nuclides, JENDL/HE-2007 [5] reproduces our Exp. data within 30% for heavy nuclides. In our poster, comparison with nuclear reaction models in PHITS [6] is also presented.

References

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