A.I. Alikhanyan National Science Laboratory

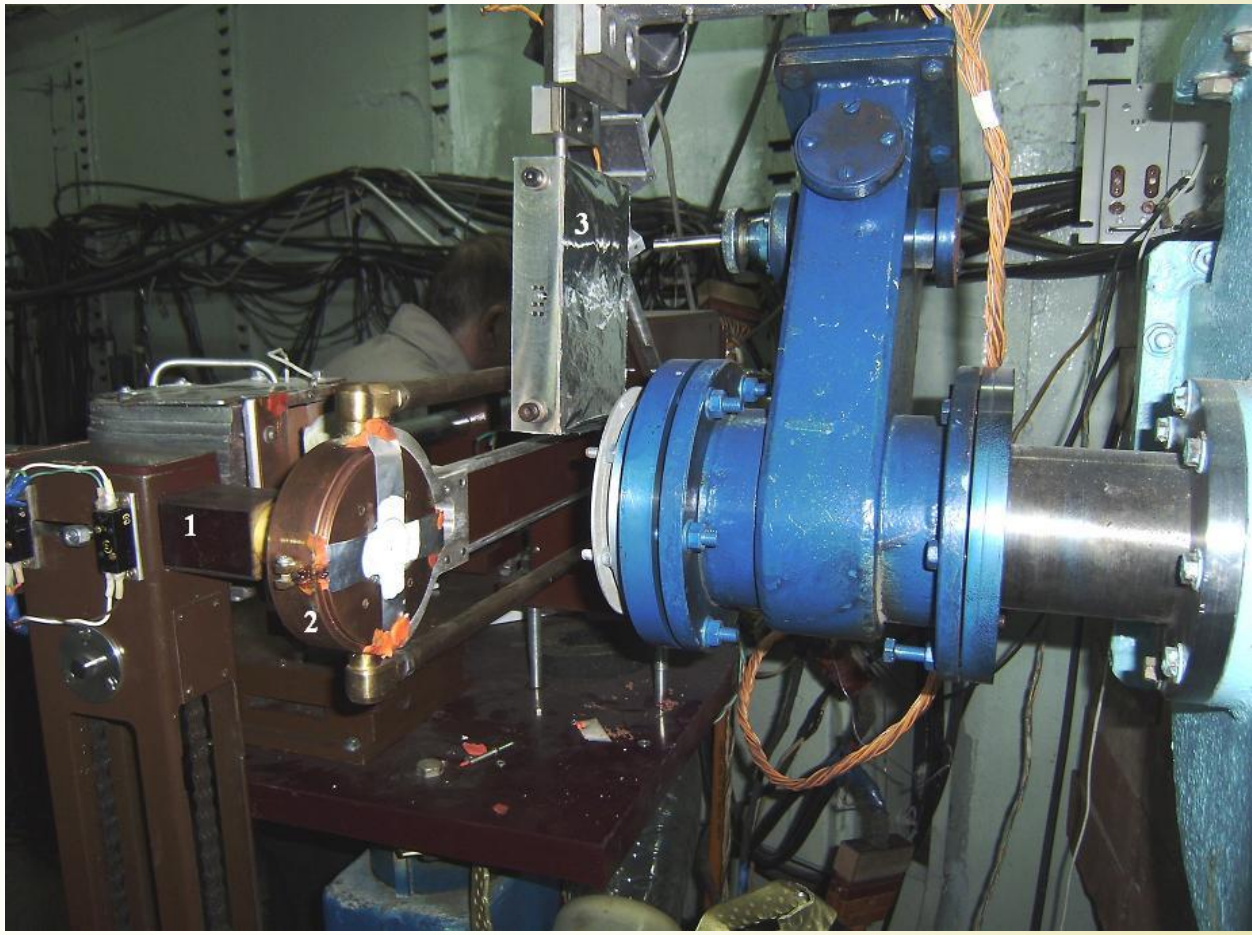
Speaker: Margarit Hakobyan

Group 100/6

TALYS 1.4

- Can be used in the **E=1keV÷200MeV** incident energy range
- Treats **n, γ, p, d, t, α** as projectiles
- Can be used for target mass numbers between **A=12÷339**

^{nat}Te target irradiation 44 min with intense beam of bremsstrahlung photons from the $E_{\gamma max}$ = 40 MeV electron beam of LUE50 linear accelerator of A.I. Alikhanyan National Science Laboratory

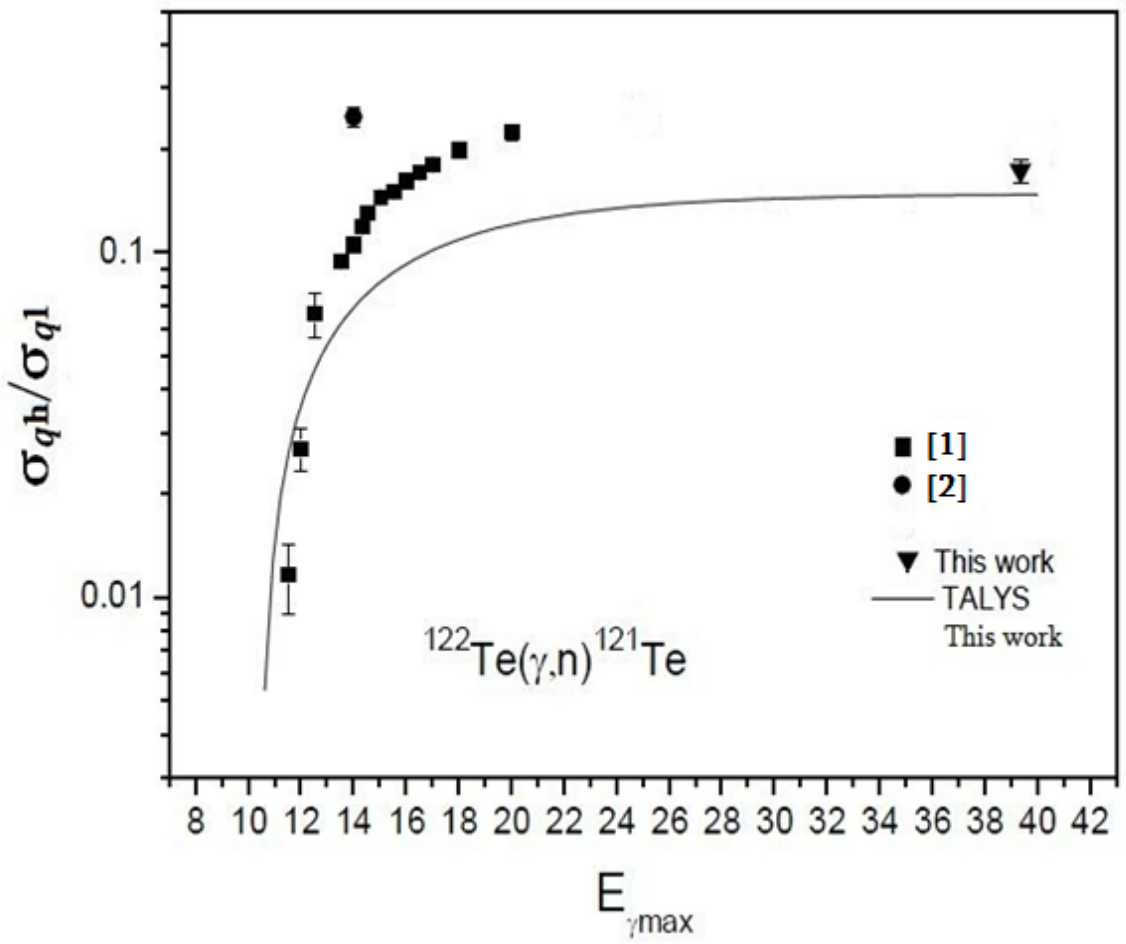


1 - target cell remote handling system

2 - target module

3 - high aperture wire scanner

Isomeric ratio



^{121m}Te	Spin $11/2^-$
^{121g}Te	Spin $1/2^+$

$^{122}Te(\gamma,n)^{121m}Te$

$^{122}Te(\gamma,n)^{121g}Te$

[1] В. М. Мазур, З. М. Биган, Д. М. Симочко, Т.В. Полторжицька, Письма в ЭЧАЯ **9**, 411 (2012).

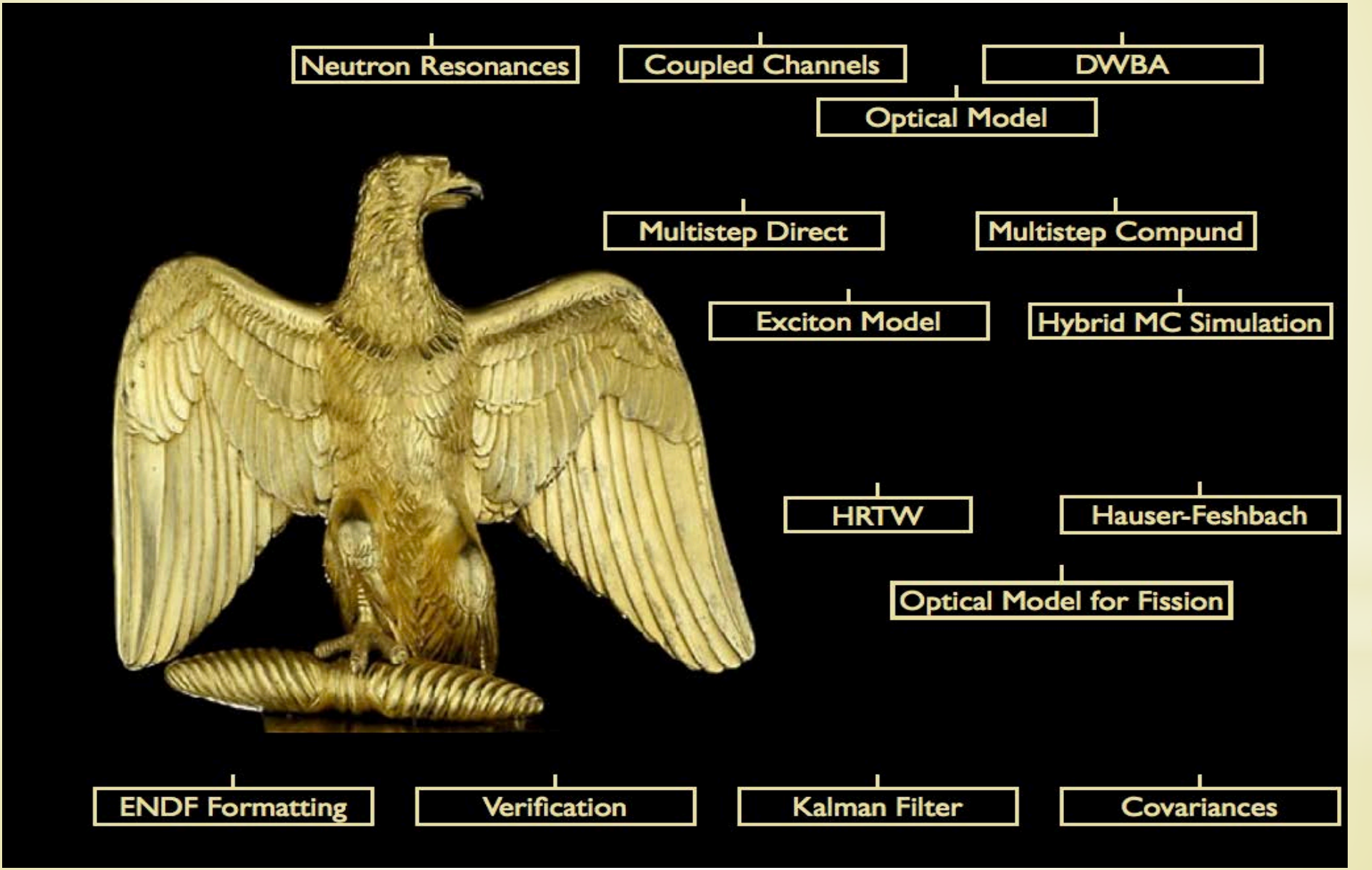
[2] Tran Duc Thiep,Truong Thi An, Nguyen Tuan Khai, *et al.*, Phys. Part. Nucl. Lett. **6**, 126 (2009).

(p,n)reaction excitation function investigations on C18

1. $^{nat}W(p,xn)^{182,183,184,186}Re$
2. $^{nat}Gd(p,xn)^{152,155,149,161}Tb$
3. $^{203}Tl(\ p,n)^{203}Pb$

EMPIRE-3.1 (Rivoli)

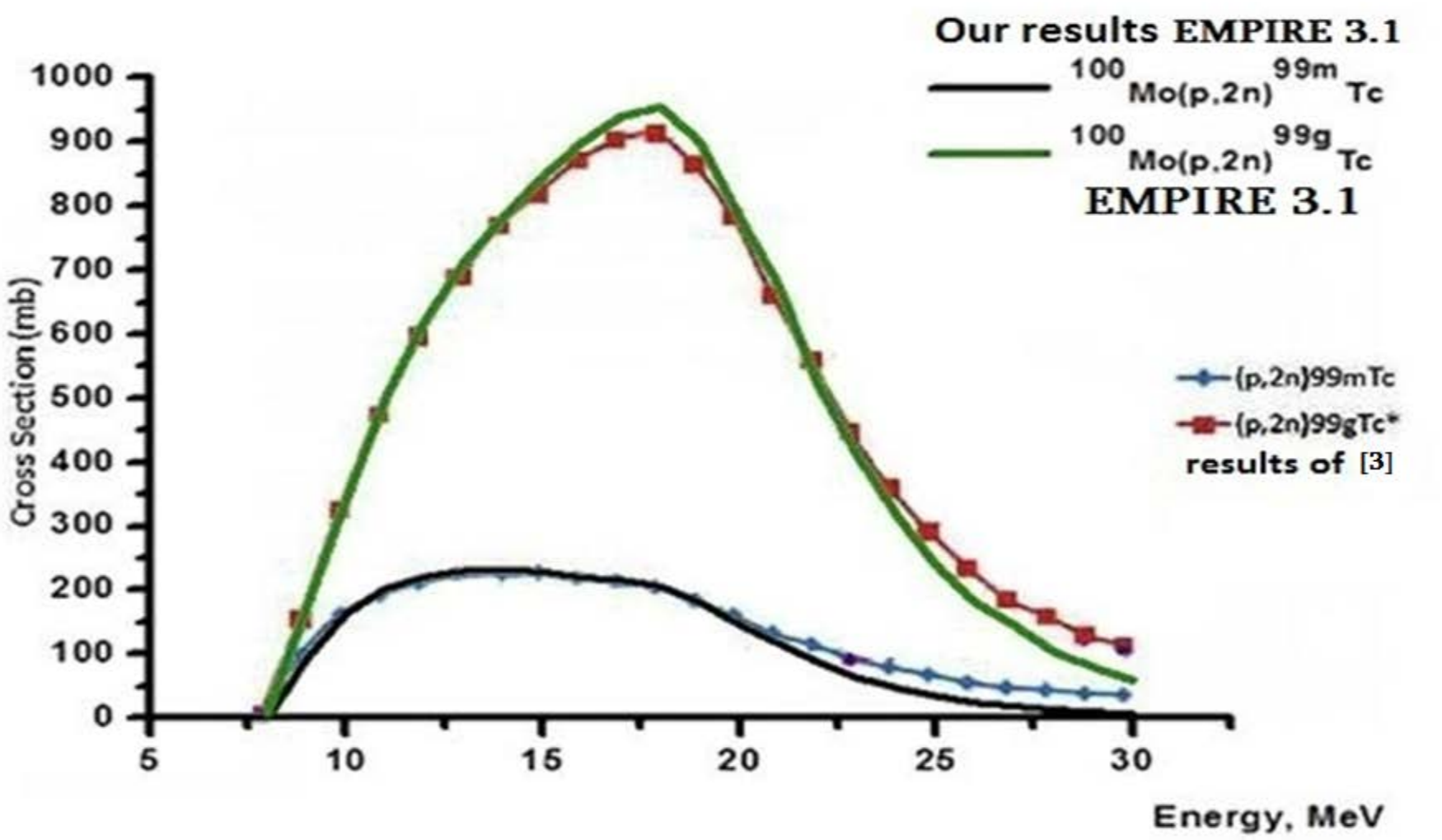
Nuclear Reaction Model Code



EMPIRE 3.1

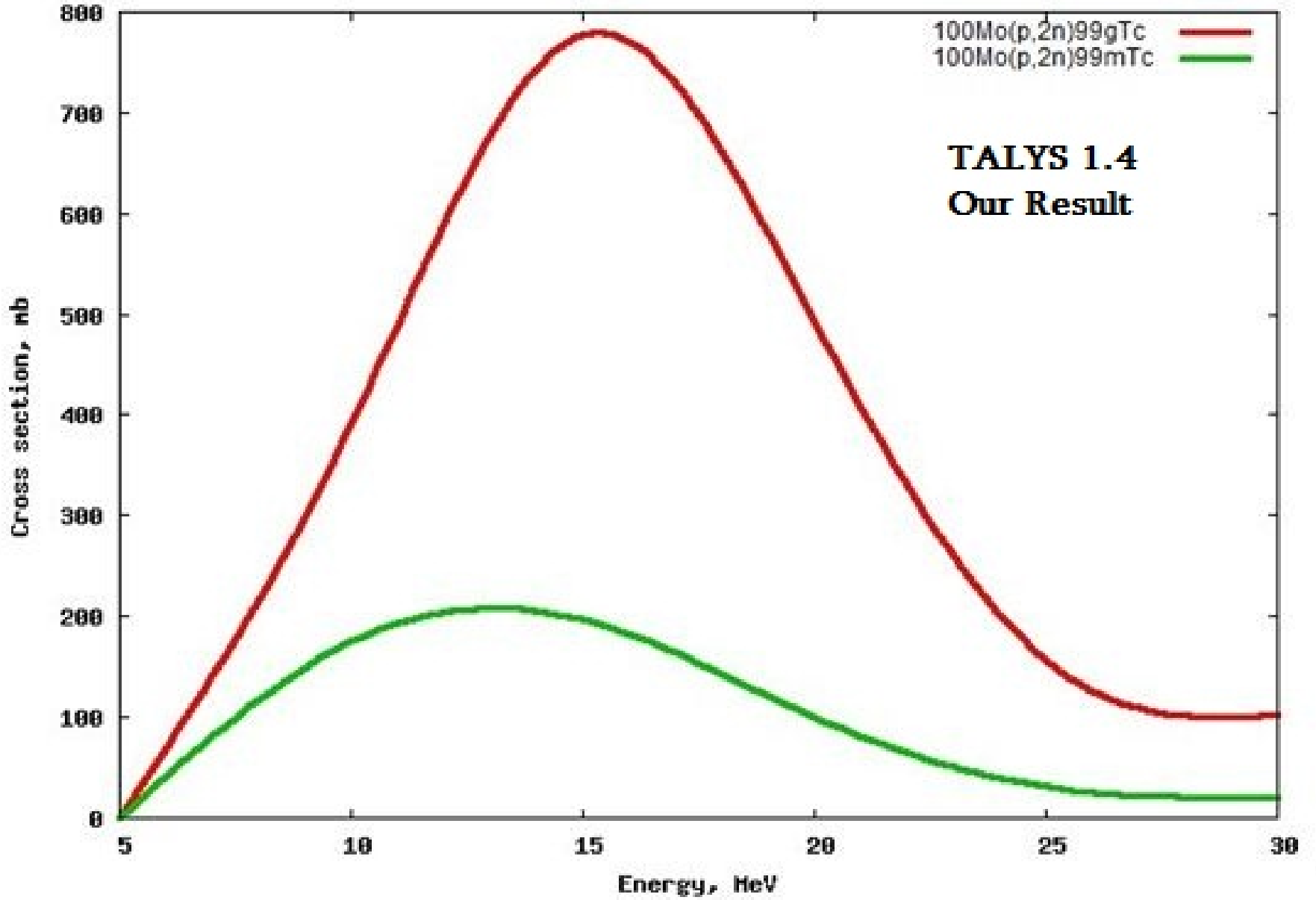
- Can be used in the **E=1keV÷200MeV** incident energy range
- Treats **n, γ, p, d, t, α** as projectiles and all ions
- Can be used for all mass numbers

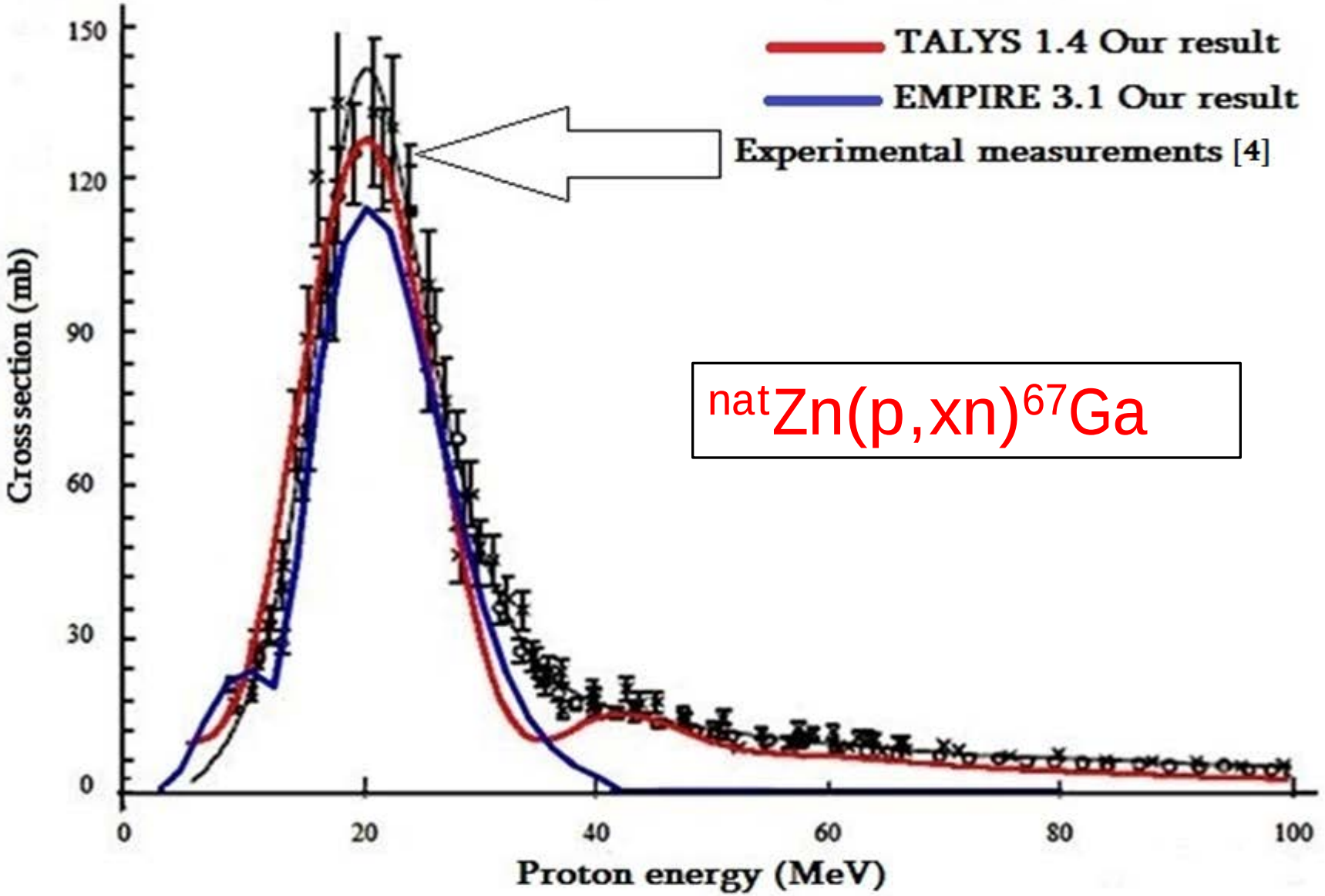
$^{100}Mo(p,2n)^{99m,g}Tc$



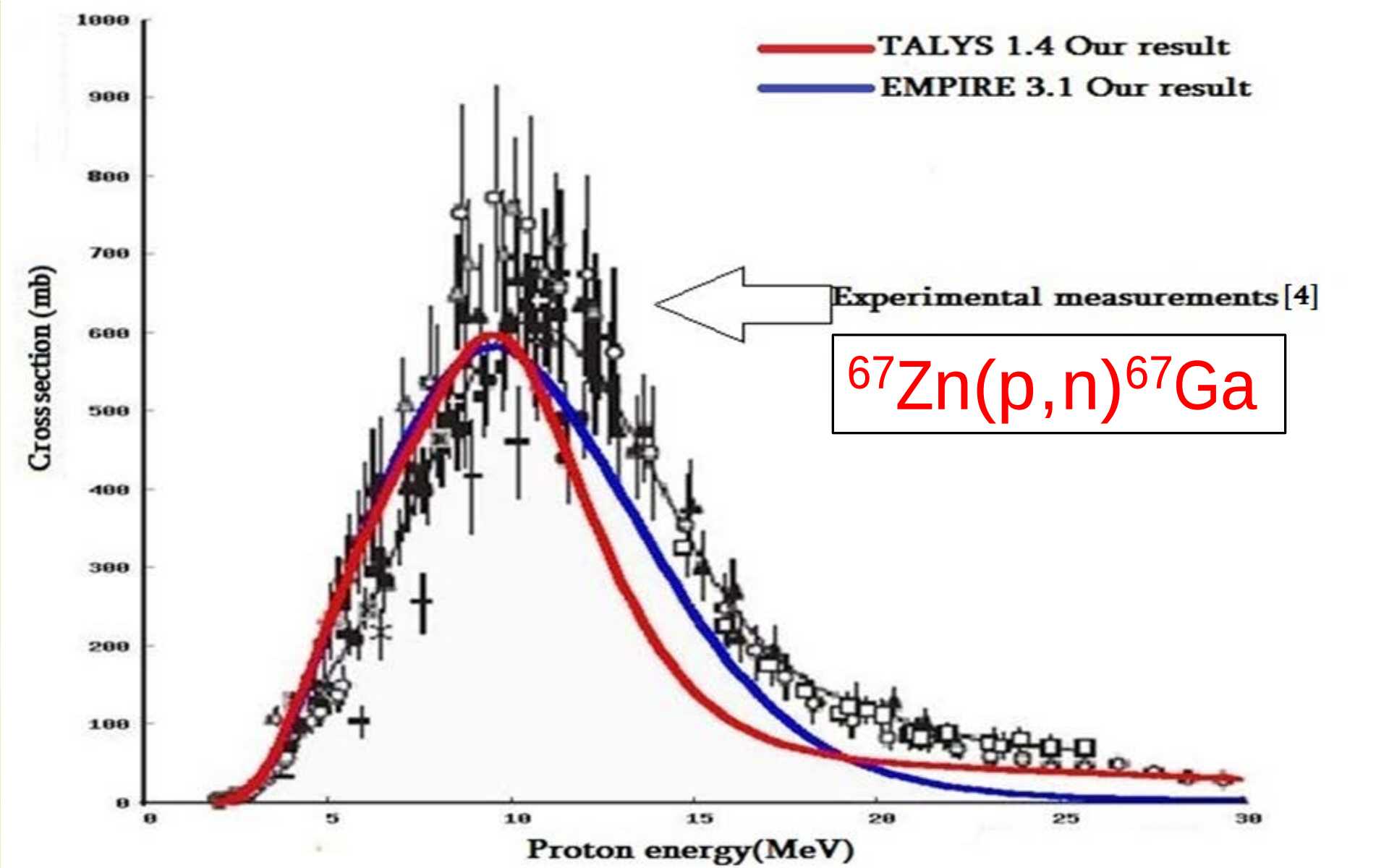
[3] A Celler, X Hou, F B´enard and T Ruth
Theoretical modeling of yields for proton-induced reactions on natural and enriched molybdenum targets

$^{100}Mo(p,2n)^{99m,g}Tc$



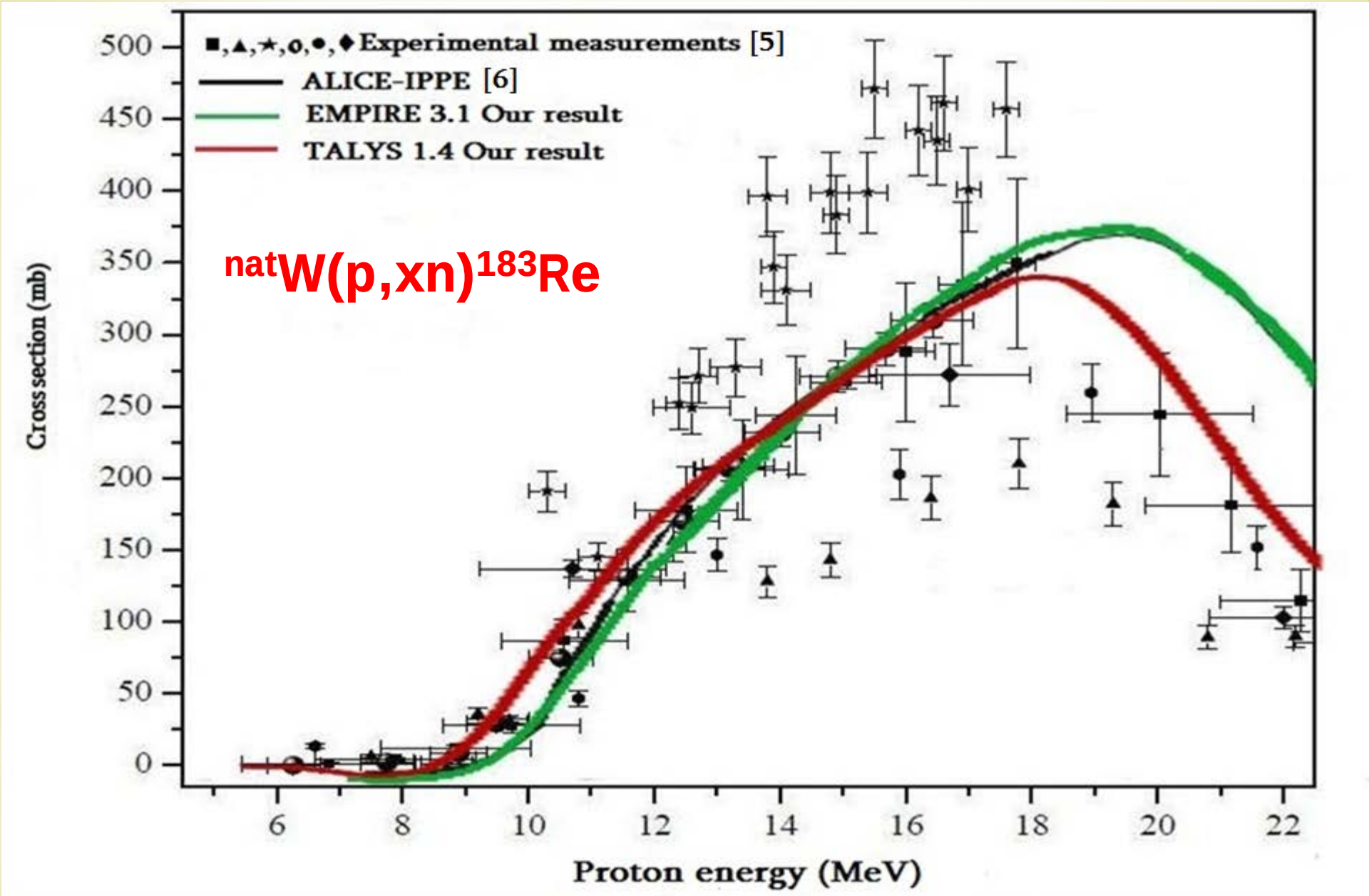


[4] Nuclear Data for the Production of Therapeutic Radionuclides, Technical Reports Series no. 473, p. 194-202, IAEA, Vienna 2011.



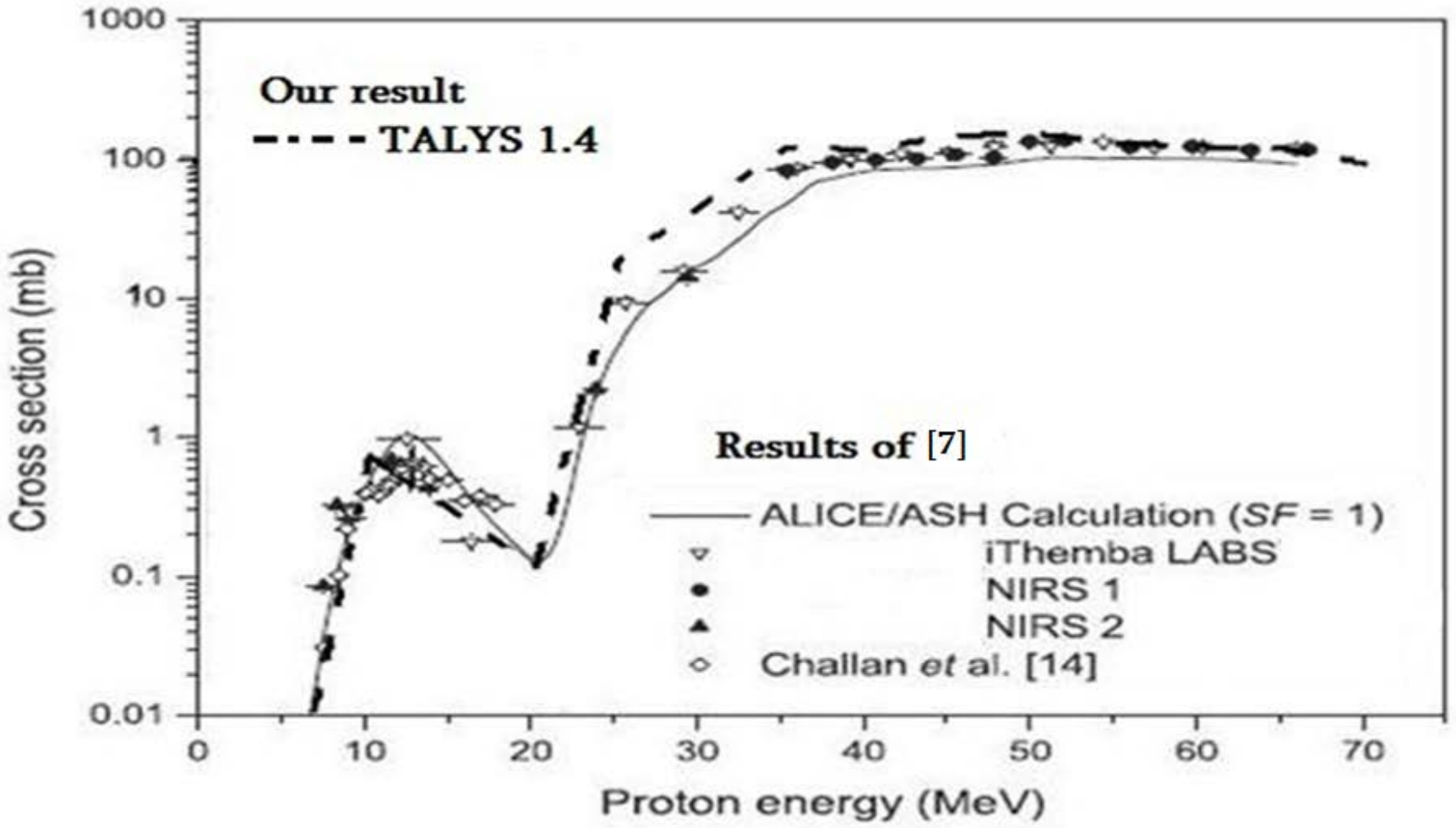
Our Article

R.Avagyan, R.Avetisyan, G.Bazoyan, M.Hakobyan, I.Kerobyan, "Evaluation of the yields of Ga-67 produced on cyclotron C18", AJP 7(2) 2014.



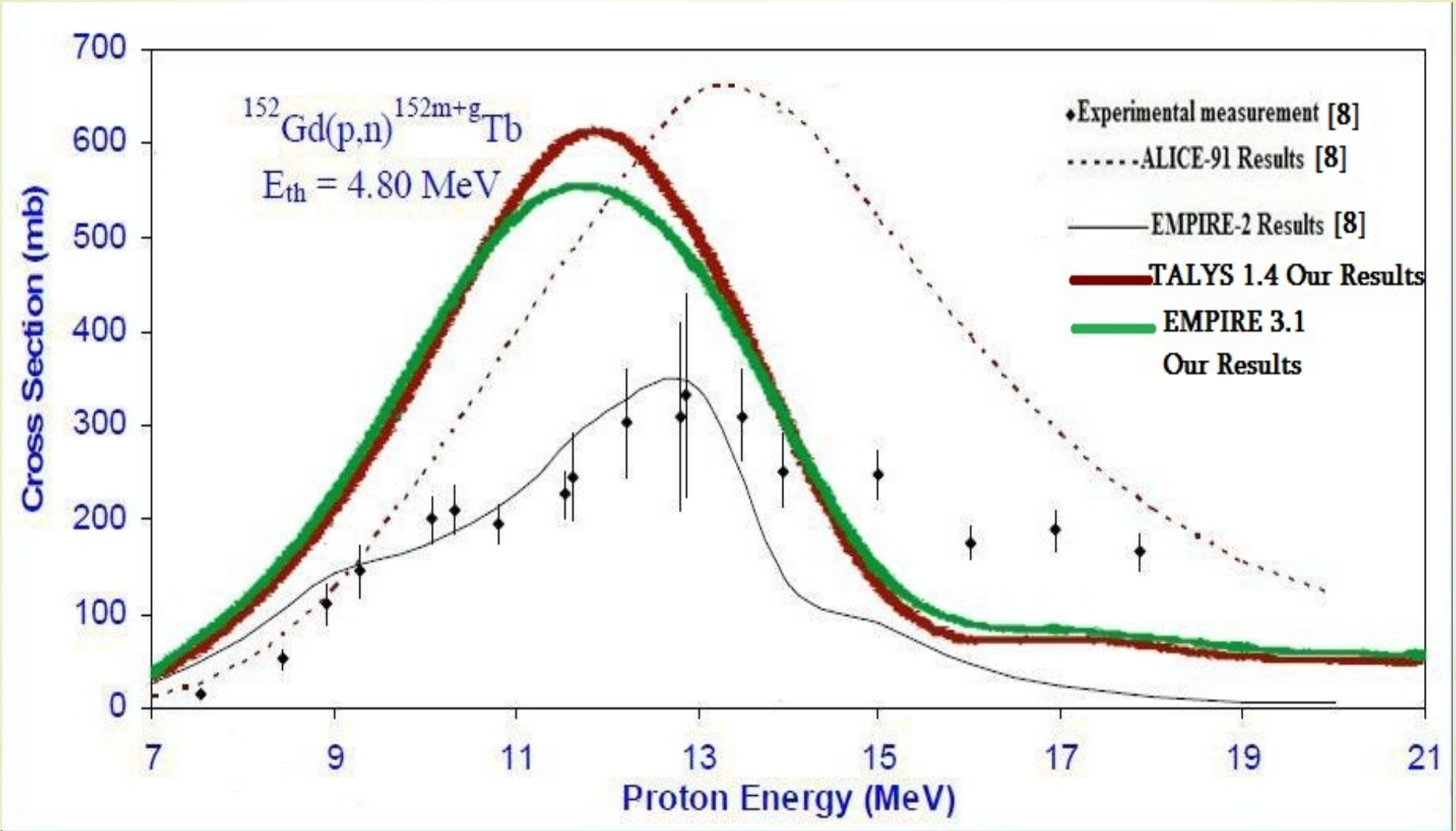
[5] E. Persico, M.L. Bonardi, F. Groppi, L. Canella, C. Zona, LASA, EXCITATION FUNCTIONS AND YIELDS FOR Re-186g PRODUCTION BY PROTON CYCLOTRON IRRADIATION. JRC-EC, via E. Fermi 1, 21020 Ispra (VA), Italy
[6] M. U. Khandaker, M. S. Uddin, K. S. Kim , M. W. Lee , Y. S. Lee , G. N. Kim, Excitation functions of proton induced nuclear reactions on natW up to 40 MeV No.3787, Dhaka-1000, Bangladesh.

$^{nat}Gd(p,n)^{152}Tb$



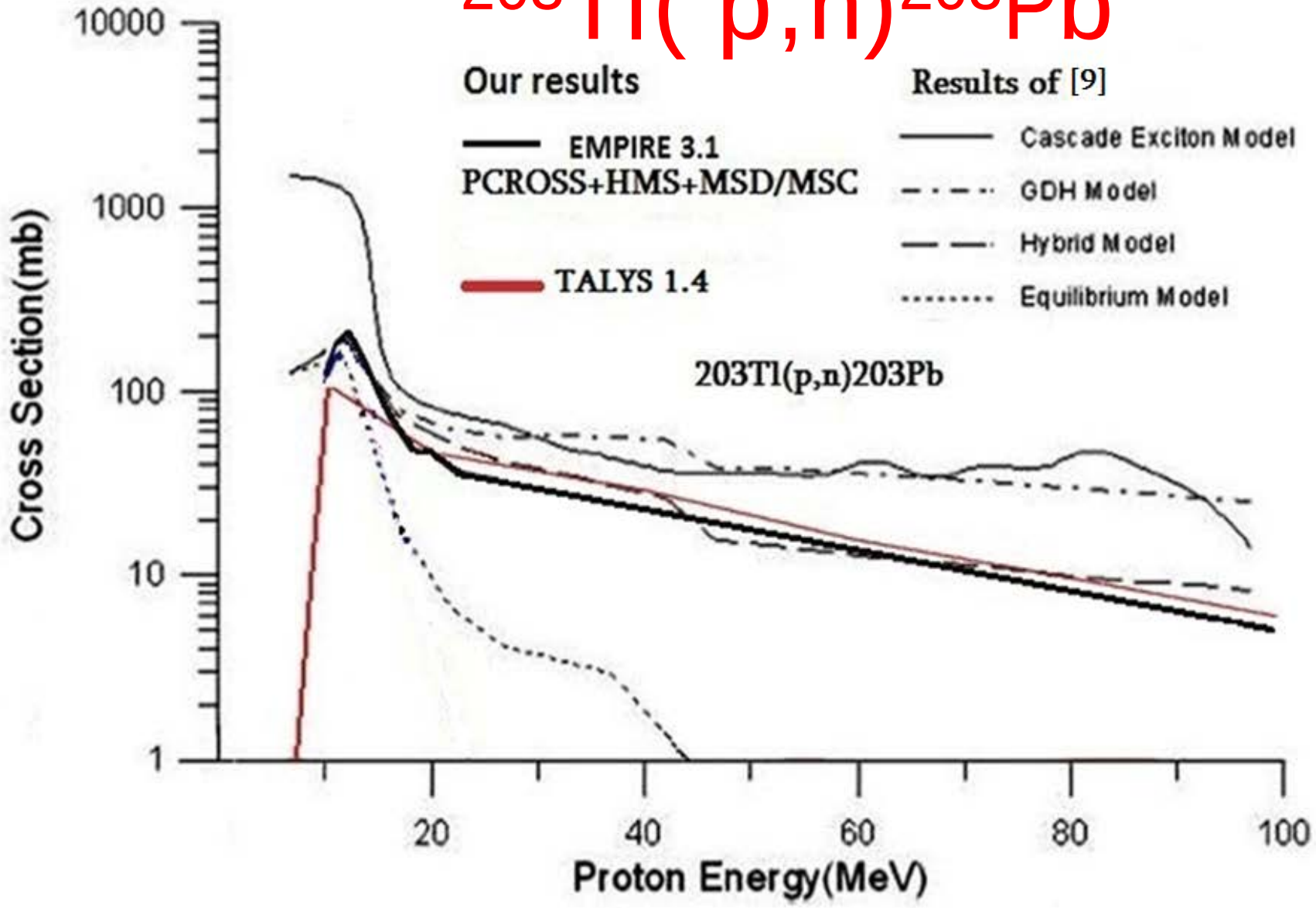
[7] C. Vermeule, G.F. Steyn , F. Szelecsenyi , Z. Kovacs , K. Suzuki , K. Nagatsu , T. Fukumura , A. Hohn , T.N. van der Walt Cross sections of proton-induced reactions on natGd with special emphasison the production possibilities of 152Tb and 155Tb

$^{152}Gd(p,n)^{152m,g}Tb$



[8] EXCITATION FUNCTIONS OF RADIONUCLIDES PRODUCED BY PROTON INDUCED REACTIONS ON GADOLINIUM TARGETS
M.B. Challana, G.S. Moawadb, M.A. Abou-Zeidc, and M.N.H. Comsana a Experimental Nuclear Physics Department, Nuclear Research Center, AEA, Postal Code 13759, Cairo, Egypt.

$^{203}Tl(p,n)^{203}Pb$



[9] KAPLAN, AYDIN,TEL and SARER Equilibrium and pre-equilibrium emissions in proton-induced reactions on 203Tl, 205Tl

C O N C L U S I O N

Nuclear reaction model calculations play an important role in the nuclear data evaluation.

To have correct theoretical model calculations we need to have experimental data.

* Thank you