The cosmologically relevant $^7\text{Be}(n,\alpha)^4\text{He}$ reaction in view of the recent THM investigations

L. Lamia$^{a,b}$, C. Spitaler$^{a,b}$, C.A. Bertulani$^a$, S.Q. Hou$^{c,d}$, M. La Cognata$^b$, R.G. Pizzone$^b$, S. Romano$^{a,b}$, M.L. Sergi$^b$, and A. Tumino$^{b,e}$

$^a$Dipartimento di Fisica e Astronomia-Università di Catania (Catania, Italy),
$^b$Laboratori Nazionali del Sud, INFN-LNS (Catania, Italy),
$^c$Department of Physics and Astronomy, Texas A&M University-Commerce (TX),
$^d$Institute of modern Physics, Chinese Academy of Science (Lanzhou, China),
$^e$Facolta’ di Ingegneria e Architettura, Universit degli Studi di Enna “Kore” (Enna, Italy)

The role of the unstable $^7\text{Be}$ during the early epoch of the Big Bang Nucleosynthesis is currently matter of study in view of the long-standing $^7\text{Li}$ cosmological problem [1]. Recently, the Trojan Horse Method (THM) [2] have been applied for measuring the cross section of the $(n,\alpha)$ reaction channel on $^7\text{Be}$ by means of charge-symmetry hypothesis applied to the previous $^7\text{Li}(p,\alpha)^4\text{He}$ THM data corrected for Coulomb effects. The deduced $^7\text{Be}(n,\alpha)^4\text{He}$ data overlap with the Big Bang nucleosynthesis energies and the deduced reaction rate allows us to evaluate the corresponding cosmological implications [3].

References