

Abstract Submitted
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On the Gamow Peak in Thermonuclear Reactions JOSEPH NEWTON, CHRISTIAN ILIADIS, ARTHUR CHAMPAGNE, University of North Carolina at Chapel Hill and Triangle Universities Nuclear Laboratory, ALAIN COC, CSNSM, CNRS/IN2P3/UPS, Bat. 104, 91405 Orsay Campus, France, YANNIS PARPOTTAS, Department of Physics, University of Cyprus, CLAUDIO UGALDE, University of North Carolina at Chapel Hill and Triangle Universities Nuclear Laboratory — The Gamow peak is an essential tool when considering non-resonant thermonuclear reactions. It is the mechanism for describing the effective burning window of charged particle reactions, at a given temperature. It is an especially useful tool when determining thermonuclear reaction rates. The Gamow peak concept is also widely used in connection with narrow resonances [1]. If the nuclear reaction of interest is in the narrow resonance realm, then the Gamow peak concept will break down under specific conditions. Stellar rates are often dominated by the narrow resonance contributions to the reaction rates, and therefore may be significantly affected by the misuse of the Gamow peak. We investigated ten different (p,γ) reactions, ranging from $A=21$ to $A=35$ and determined a true effective energy burning window using each reaction, at a given energy, which is often significantly different from the Gamow peak window. [1] W.A. Fowler and F. Hoyle, *Astrophys. J. Suppl.* 9, 201 (1964) app. C.

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