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The secondary supernova machine: Gravitational compression, stored Coulomb energy, and SNII displays

The author wants to present an uncommon description of an energy transfer process in core-collapse supernovae: namely, a gravitational machine that increases Coulomb energy within nuclei via silicon burning. Excess of that Coulomb energy is returned weeks and months later by weak nuclear decays (EC and beta+). Those decays energize several observable quantities: gamma-ray lines, X-ray luminosity, free chemical energy and optical light curves. The delay of the energy return is essential for visibility of these activations. These secondary displays have rich literatures; but expressing them as observables of a supernova machine, whose action can be summarized as gravitational compression→Coulomb nuclear energy increase→release of excess of that Coulomb nuclear energy by electroweak decays→supernova displays, is novel.

Biography

Bradley S Meyer has completed his PhD from the University of Chicago and Postdoctoral studies at Lawrence Livermore National Laboratory. He has been a Professor at Clemson University since 1990. His research focuses on nucleosynthesis, that is, formation of the chemical elements in the early universe, stars, and stellar explosions, and manifestations of nucleosynthesis in astronomy and cosmochemistry. He has published more than 100 papers in reputed journals.

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