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Nucleosynthesis of the elements and the liquid metallic hydrogen model of the Sun PIERRE-MARIE ROBITAILLE, The Ohio State University — Modern nucleosynthesis theory stems from the anticipated life cycle of stellar objects. Within this framework, the Sun, as a relatively young and light main sequence star, is unable to synthesize any element beyond helium. All metallic elements in our solar system have consequently been hypothesized to arise from the explosion of early stars which previously populated this region of the galaxy. Much of nucleosynthesis theory currently rests on gaseous stellar models and has developed in a direction consistent with such objects. In this presentation, the problem of nucleosynthesis is briefly reconsidered within the context of a condensed Sun. Such an object, built from liquid metallic hydrogen provides a new avenue for nucleosynthesis. Nuclei and protons contained within a metallic hydrogen lattice, will be subjected to vibrational modes which should be conducive to promoting internuclear reaction. The pressures within the Sun should make the synthesis of all the elements possible based on the combination of lighter elements. In stark contrast to current theory, it is advanced that all elements, beyond hydrogen, can be made within such a thermonuclear furnace.

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