

Abstract Submitted  
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**Transient Formation of Super-Explosives under High Pressure for Fast Ignition.** FRIEDWARDT WINTERBERG, University of Nevada, Reno — Dense matter, if put under high pressure, can undergo a transformation from an atomic to a molecular configuration, where the electron orbits go into lower energy levels. If the rise in pressure is very sudden, for example by a strong shock wave, the electrons change their orbits rapidly under the emission of photons, which for more than 100 megabar can reach keV energies. With the opacity of dense matter going in proportion to the square of the density, the photons can be efficiently released from the surface of the compressed matter by a rarefaction wave. The thusly produced X-ray photons can be used for the fast ignition of a thermonuclear target. Since as for thermite, the conjectured super-explosives are likely to come from the reaction between two different atoms, they should be made from a mixture of nanoparticles. The proposed mechanism may be also responsible for the large keV X-ray bursts in exploding wire arrays, which can not be explained by a simple kinetic into thermal energy conversion model.

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