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Many faces of lithium metal under pressure¹

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Even at zero temperature lattice of lithium remains far from static. In periodic table lithium is the first element immediately after helium and the lightest metal. While fascinating quantum nature of condensed helium is suppressed at high densities, because of the presence of long range interactions in metallic systems, lithium is expected to adapt more quantum solid behavior under compression. Physics of dense lithium offers a rich playground to look for new emergent quantum phenomena in condensed matter. In this talk I will discuss the physics of ultra-light materials under extreme pressures and will present some of our studies on quantum contributions to the structural and electronic phase transitions of lithium, and will present our results on the resolving the long lasting mystery of lithium ground state

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