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The LANL Research Program on Ion-Based Fast Ignition¹ JUAN C. FERNANDEZ, B.J. ALBRIGHT, K.A. FLIPPO, C. GAUTIER, B.M. HEGELICH, M.J. SCHMITT, R.K. SCHULZE, L. YIN, Los Alamos National Lab., E. BRAMBRINK, M. GEISSEL, Sandia National Lab., P. ANTICI, J. FUCHS, LULI — A few LANL research programs are engaged in activities that are being coordinated as a research program to evaluate fusion fast ignition (FI) initiated by laser-driven ion beams heavier than protons. Compared to protons, FI based on heavier ions has the potential advantage of a more localized energy deposition, which could minimize the required total ion-beam energy ($\sim 10 \text{ kJ}$). This FI scheme also requires about 100-fold fewer ions to deliver the necessary energy to ignite. Key ingredients necessary to implement this scheme include the generation of a sufficiently monoenergetic beam, at a sufficiently high ion energy, along with a sufficiently high conversion efficiency of laser to beam energy. Moreover, a better understanding of ion stopping power in dense matter is necessary. The research elements addressing these issues, both in the area of theory and experiment, are summarized in this presentation.

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