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MeV electron generation and transport in ultrathin and thick solids JULIEN FUCHS, PATRIZIO ANTICI, LULI, France, MARCO BORGHESI, Queen's University, UK, EMMANUEL D'HUMIÈRES, CPhT, France, U. of Nevada, Reno, USA, LAURENT GREMILLET, CEA, France, THOMAS GRISMAYER, PATRICK MORA, CPhT, France, ERIK LEFEBVRE, CEA, France, CARLO CECCHETTI, Queen's University, UK, ANA MANCIC, MOTOAKI NAKATSUTSUMI, LULI, France, ARIANE PIPHAL, Heinrich-Heine-Universität, Germany, LORENZO ROMAGNANI, Queen's University, UK, YASUHIKO SENTOKU, U. of Nevada, Reno, USA, OSWALD WILLI, Heinrich-Heine-Universität, Germany, PATRICK AUDEBERT, LULI, France — We will present recent results regarding MeV electron generation by ultra-intense lasers and their transport through solids. The fast electron density and mean energy are measured via electron spectrometry and optical probing of the fast electron cloud emerging from the target rear side. In particular, our data indicate that the fast electron generation is enhanced when using ultra-thin foils (50 nm) and ultra-high contrast laser pulses. Moreover, strong modulations are found to affect the transverse profile of the electron beam as a result of a magnetic instability developing at the target/vacuum interface. The latter result could have important implications for the Fast Ignition scheme using re-entrant solid cones embedded in fusion capsules.

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