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Laser imprint reduction with an under-dense foam and its effect on hydrodymamic instability growth PHILIPPE NICOLAI, MARINA OLAZABAL-LOUME, University of Bordeaux, France, SHINSUKE FUJIOKA, ATSUSHI SUNAHARA, ILE, Osaka, Japan, NATALIYA BORISENKO, ANDREY OREKHOV, Lebedev Inst., Moscow, Russia, MICKAEL GRECH, MPIPKS, Dresden, Germany, GILLES RIAZUELO, CEA, France, STEFAN WEBER, University of Bordeaux, France — In the direct drive approach, inhomogeneities in the laser beam intensity distribution may create pressure perturbations on the target surface and induce hydrodynamic instabilities. These instabilities may decrease the fuel compression and reduce the energy gain. The control of the latter is one of the crucial problem of the Inertial Confinement Fusion. In order to control the laser energy distribution in the plasma, optical techniques of laser beam smoothing are implemented. Unfortunately, these techniques are not operational at early time and the instantaneous intensity fluctuations are imprinted in the solid target. It has been shown that an under-dense and under-critical foam, placed in front of the target could smooth the laser imprint at the beginning of the laser pulse [Depierreux et al, Phys. Rev. Lett. 102, 195005 (2009)]. In a recent experiment at the GEKKO XII facility, we have directly studied the effects of the foam on the hydrodynamic instability growth. The principles, the design and the first results of the experiment will be presented.

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