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The long running quest for demonstrating ignition and gain in Inertial Confinement Fusion [1] has come to crucial point, where the proof of principle of this approach to fusion energy is within the reach of the scientific community. We present the status of this field of research, both at the international [2] and european level [3], focussing on the experimental activities, on the guiding models, and on the diagnostic tools that are routinely used or currently developed. The path ahead is also indicated, highlighting some of the key points in the design of a fusion reactor. The recent results obtained by our group concerning target design for shock ignition [4] and optimization of irradiation schemes [5] are illustrated.

References

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- [5] A. Schiavi, S. Atzeni and A. Marocchino, *Europhysics Letters* 94 (2011) 35002

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