How Ignition and Target Gain > 1 was achieved in inertial fusion

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For many decades, the running joke in fusion research has been that `fusion' is twenty years away and always will be. Yet, this year we find ourselves in a position where we can talk about the milestones of burning plasmas, fusion ignition, and target energy gain greater than unity in the past tense – a situation that is remarkable! In this talk, we tell the story of the applied physics challenges that needed to be overcome to achieve these milestones and the strategy our team followed. To help understand the story, several key physics principles of inertial fusion will be presented, and I will try and dispel any confusion about what the terms burning, ignition, and gain mean in the context of inertial fusion research.

These results have awakened a German interest in inertial fusion: https://www.bmbf.de//SharedDocs/Downloads/de/2023/230522-memorandum-laser-inertial-fusion-energy.pdf