Report September 18, 2025

Short Report: Advances at Proton-Boron Fusion Conference, in Lab

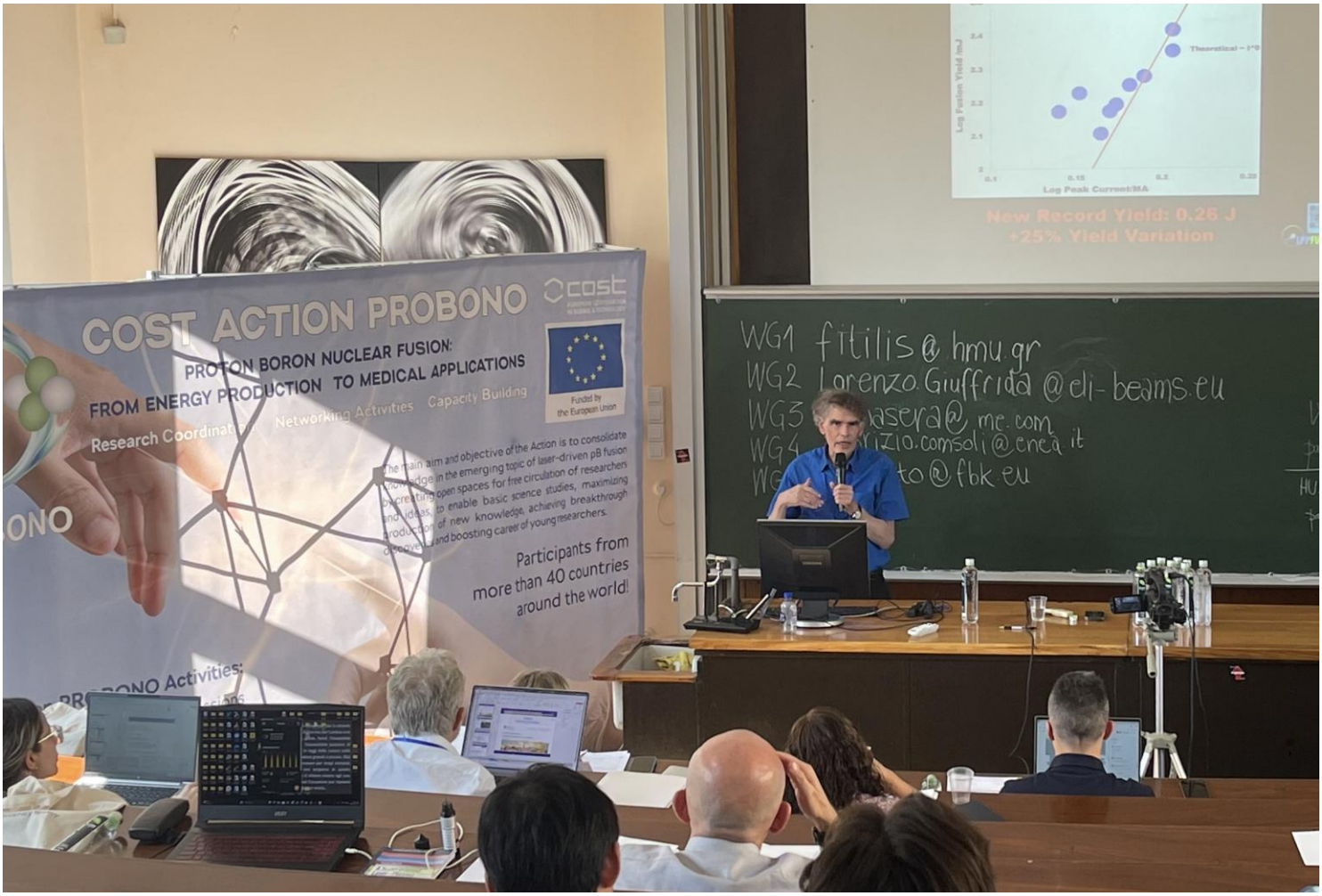
We have a short summary report this month, as LPPFusion Chief Scientist Eric Lerner, who drafts the reports, has been at the Probono (Proton-Boron Fusion) Workshop and will be on a brief vacation this month. So, he does not have time for a full report, which takes a long time to write. (This has sometimes happened in the past when we skip a report for this reason.) However, all investors and donors will receive a link to a detailed Zoom report, including a Q&A session, on October 11 at 1:00 PM ET—with a recording available for those who cannot attend. For more details, be sure to invest or donate before October 11!

At the 5th International Workshop on Proton-Boron Fusion in Belgrade, Serbia, Sept 7-11, Prof. Dieter Hoffman of Xi'an Jiatong University reported achieving a new record in hydrogen-boron fusion yield using the Mianyang laser on a solid target. LPPFusion's Lerner and LPPFusion CIO and Director of Communication, Ivy Karamitsos, attended the conference, where Lerner gave one of six invited presentations. (The conference was held at the institute where Karamitsos started her university studies.)

We reported on new results in our experiments with decaborane (H10 B14) fuel in our FF-2B dense plasma focus. We've observed the first set of regular filaments with almost pure decaborane. This is encouraging, as the filaments are the first step in compressing and heating the fuel to fusion temperatures. In the same Aug.14 shot, we saw the first small "pinch", when the plasmoid forms. The plasmoid is the self-confined blob of plasma where fusion reactions take place. However, the plasmoid was not dense enough for measurable boron fusion reactions.

We also reported on problems encountered, as well as proposed solutions and next steps. We've identified a separation of hydrogen and boron that led to the formation of stripes of beryllium-boron (BeB) compounds on the anode—the central electrode of our device. (See our last report.) This is caused by a too-fast velocity of the plasma sheath as it moves down the anode, leaving the boron behind and allowing it to deposit on the anode, forming the stripes. Unfortunately, the stripes, which are not electrically conducting, focused the current in tiny grooves between the stripes, cracking the anode.

With a spare anode in place, we expect to resume shots in November. We can slow down the plasma by putting more decaborane in the chamber. More gas accelerates more slowly, just as a heavier car does. By slowing down the plasma sheath, we expect to avoid the separation of the boron and the formation of the pesky stripes. This should lead to a measurable fusion yield. If it does, we'll leapfrog ahead of the new results out of China.



LPP Fusion Chief Scientist Eric Lerner presents our latest results to the 5th International Workshop on Proton-Boron Fusion in Belgrade, Serbia. More than 60 researchers from around the world attended.