4CF15-2015-000160

Abstract for an Invited Paper
for the 4CF15 Meeting of
the American Physical Society

What 1-Kelvin plasmas can tell you about thermonuclear fusion[1]

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The pursuit of efficient plasma fusion is a quest to optimize the right kinds of ion-ion collisions – the collisions that lead to fusion. These "good" collisions are intentionally left out of normal plasma models because they are theoretically messy, physically violent, somewhat rare, and impossible to measure directly. But we have learned how to slow collisions down and to measure them in real time. We use lasers to make plasmas with temperatures in the 1-Kelvin range. The collisions that occur here are similar, in a way, to the "good" ones that occur at much higher temperature and density. I will talk about things we can learn in this super low temperature environment and why they are interesting to high energy density plasmas.

[1]Supported in part by NSF (PHY-1404488) and AFOSR (FA9950-12-1-0308)