

Date: Mon, 24 Jul 2006 17:53:17 -0400
From: Rusi Taleyarkhan <rusi@ecn.purdue.edu>
To: hl@haikolietz.de
CC: Yiban Xu <yiban@ecn.purdue.edu>, "Richard T. Lahey Jr.", Brian Josephson, Steve Krivit
Subject: Re: Putterman reponse (Movie from UCLA for the record attesting to quality of their work)-rpt->h.leitz(7.24.06)

Dear Haiko:

Responses in the text itself. Dick can speak for himself also.

Regards,

Rusi

[HL] Yiban reported in NED 235 that "cometlike structures can last for several tens of milliseconds and appear to play a critical role in terms of their ability to induce bubble nuclear fusion."

[RT] Right. Yiban showed categorically that comet-like structures did not allow bubble nuclear fusion in his NED and NURETH-11 papers.

[HL] Does that mean that UCLA is close to achieving the right conditions?

[RT] Quite the contrary. Getting comet-like structures is easy and one of the first things one sees. One not only needs to get out of this mode but also to get the SL time evolution history as shown in our PRE (2004) paper.

The video clip UCLA's group sent to me not long ago towards the end of our project bears testimony to their abilities/accomplishments or lack of them. Note the long-lasting (hundreds of milliseconds duration) distinct pencil like comet structures of the bubble clusters rather than our reported (5 ms duration) spherical clusters at the rate of 25 to 30 per second (not just 1 or two every few seconds as seen in the movie).

This is just the beginning. We've talked at length of the importance of deriving transient bubble evolution patterns where (as we have shown in our 2004 PRE paper) the majority of SL flashes and neutrons transpire after the first implosive collapse. All of this was just ignored.

This week I've conveyed to DARPA's manager that the UCLA group can not be helped. To have one of the world's leading scientific magazines like Nature draw conclusions relying on expertise from the the UCLA group is to us a travesty of science. Having proven themselves incapable technically, they then resorted to

allegations based on contrived modeling and simulations of imagined experiment geometries.

I've mentioned the aspect related to simulations in the earlier email. Regarding Dick's point on chamber performance he is correct. The chamber and operations he witnessed during his visit to UCLA were quite different from what was to be used. Yes, per DARPA conditions we were to provide sketches and advice but UCLA was to prove itself capable of doing the rest of the work independently (to the extent it can be called that). We did provide sketches to UCLA but they proved incompetent in the following steps concerning procuring the required materials, building and importantly, the cell operations. Dick was correct in his quote to IEEE "... doomed for failure.."

[HL] What exactly is their setup doomed to fail?

[RT] See the video itself; the operations including the drive train and other operational factors such as care for degassing and wetting of motes would be the likely culprits. Additionally, the fabrication of the cells. Bottom line is that the test cell is producing pencil-like dissipative streamers which is the first thing one gets very easily and which kills hopes for spherical implosion-based high-enough compression as Brian has mentioned in an email to Nature. The other feature is the rate of nucleation; 1 per 5 seconds or so in UCLA apparatus vs 25 to 30+ per 1 second as published in Science(2002), Phys.Rev.E(2004) and NED(2005). The effect of buildup of resonance phenomena-induced growth and physics are completely neglected (recall the old mechanics examples of soldiers walking in unison on a bridge vs breaking up of steps).