On 12/16/2016 7:23 PM, Luca Comisso wrote:

Dear Steven,

I am a researcher at Princeton University in the Department of Astrophysical Sciences. Recently, my colleagues and I published an article that has genuinely important ramifications in astrophysics, space weather and nuclear fusion. Currently, it has been reported in many (> 20) national and international news outlets on account of this reason, such as WIRED, Forbes, Endgadget, Science Daily, etc.

Although it may come across as unadulterated self-promotion, we truly believe that the work is potentially very significant in answering questions that have puzzled the astrophysical and fusion communities for decades. Hence, I have taken the liberty of reaching out to you to highlight our article. Some of the most relevant articles have been enclosed below, and the link to our original paper can be found therein.

Princeton Press Release:
http://www.pppl.gov/news/2016/11/pppl-and-princeton-researchers-propose-explanation-mysterious-onset-universal-process
Forbes:
http://www.forbes.com/sites/startswithabang/2016/12/07/mystery-of-ultra-fast-solar-flares-solved-by-plasma-physics/
WIRED:
https://www.wired.com/2016/11/magnets-arent-miracles-solar-flares-burst-magic/
Engadget:
https://www.engadget.com/2016/11/28/new-magnetic-field-theory-gets-us-closer-to-nuclear-fusion/
ScienceAlert:
http://www.sciencealert.com/we-might-finally-understand-what-triggers-solar-storms-and-deadly-gamma-ray-bursts

Yours sincerely,
Luca

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From: S.B. Krivit
To: Luca Comisso

How would you explain to my readers what is significant and interesting about your work?

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Dear Steven,

The discovered results allow a detailed understanding of an instability that have detrimental effects for the magnetic confinement of fusion plasmas. The new results allow us to predict the behaviour of the instability (called plasmoid instability) as has never been possible before, bringing us a step closer to controlled thermonuclear fusion.

I hope that this help clarifying the impact of the results.

Yours sincerely,
Luca

Luca Comisso
Postdoctoral Research Associate
Department of Astrophysical Sciences and PPPL
Princeton University

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From: S.B. Krivit
To: Luca Comisso

How close are we now to controlled thermonuclear fusion as an energy source?

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Luca Comisso wrote:

If the government decides that it is something in which they truly want to invest money, then we are pretty close, no more than 15 years I think.

Sincerely,
Luca

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From: S.B. Krivit
To: Luca Comisso

Let me try again with a much more precise question so hopefully, you can give me a much more precise answer.
In terms of net output of Watts or Joules, how close are we to controlled thermonuclear fusion as a power or energy source?

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Luca Comisso wrote:

There is already a new facility that is in construction in France. It's name is ITER. It will produce 500 MW of fusion power starting from about 2025. As I told you, we are pretty close if governments think that it is a priority.

Sincerely,
Luca

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From: S.B. Krivit
To: Luca Comisso

500 MW of fusion power. Okay.

How much total input power will the entire reactor require to produce that 500 MW?

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Luca Comisso wrote:

One tenth, i.e. 50 MW.

Sincerely,
Luca

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From: S.B. Krivit
To: Luca Comisso

Let me repeat my question, so you can double-check your answer:
How much total input power will the entire reactor require to produce that 500 MW?

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Luca Comisso wrote:

As I told you, only 50 MW.

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From: S.B. Krivit
To: Luca Comisso

In what field did you obtain your Ph.D please?

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Luca Comisso wrote:

Plasma Physics from one of the two major technical university in Italy, Politecnico di Torino.

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S.B. Krivit wrote:

50 MW?

Then why does the ITER Web site say the reactor will require 110 to 620 MW during plasma operation?

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Luca Comisso wrote:

I thought you were interested in the paper, but it seems that you are interested in completely different questions for which I'm not the right person to ask.

Sincerely,
Luca

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S.B. Krivit wrote:

Well, you told me that the importance of your paper is that it "brings us a step closer to controlled thermonuclear fusion."
I want to know close we are now and how much closer your paper brings us.

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