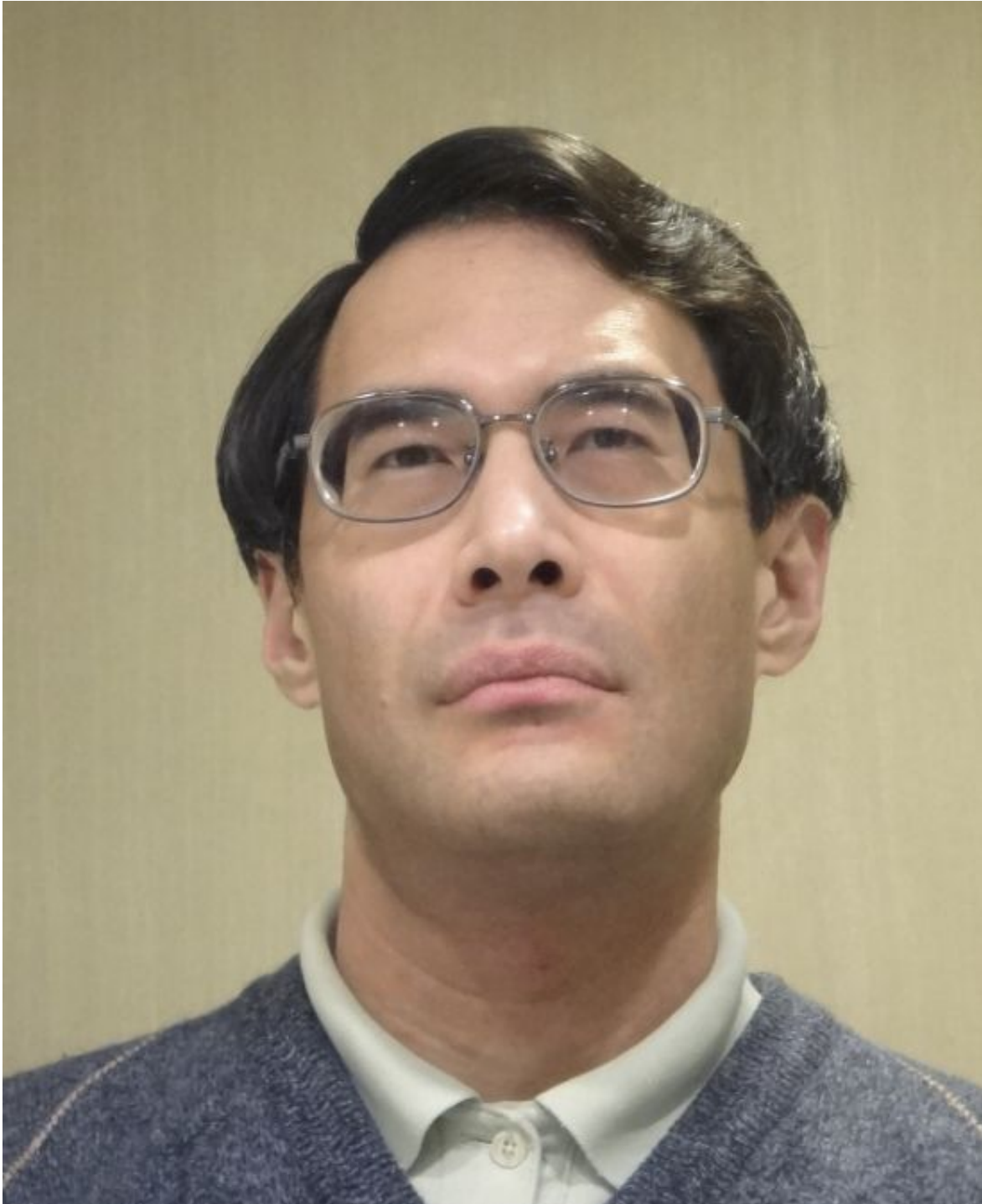


# Meeting of math minds fails to clear up ABC conjecture proof

December 17 2015, by Bob Yirka

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Shinichi Mochizuki

(Phys.org)—A group of mathematicians specializing in arithmetic

geometry met for five days earlier this month in an attempt to understand a proof constructed by Shinichi Mochizuki, of Kyoto University posted online [back in 2012](#)—it is called the "inter-universal Teichmüller" (IUT) theory and runs more than 500 pages. To date, no one has been able to verify the proof, or even understand it. This latest meeting was an attempt to overcome some of the hurdles that have impeded progress by other mathematicians in understanding what Mochizuki has done.

The proof, Mochizuki claims, offers a solution to the [ABC conjecture](#) which involves expressions of the form  $a + b = c$  and connecting the [prime numbers](#) that are factors of  $a$  and  $b$  with those that are factors of  $c$ . While seemingly simple to describe, no one prior to Mochizuki has been able to create a proof for it. If other mathematicians in the field do one day come to understand the proof, and verify it as correct, it would mark a truly historic day for mathematics. But, unfortunately, as it stands now, that day may never come.

In the three years since Mochizuki posted his proof, many experts in the field have looked at it, but all have failed to grasp what Mochizuki has tried to show. Making things more difficult is that Mochizuki appears to be shy, and even more hesitant to travel outside of his home country of Japan. This latest meeting was held, oddly, at Oxford University. Mochizuki, as expected, refused to attend, though he did make a virtual appearance via Skype.

The circumstances surrounding the proof and the difficulty others in the field are having with it offers a contrast of extremes—on the one hand, the experts working to understand it are generally a highly intelligent bunch, yet their failure to grasp what their colleague has wrought has almost certainly led to issues with pride. The result over the past three years has been the voicing of frustration, anger and perhaps a hint of hesitation—no one wants to be the guy that spent years working to

understand a proof, only to find that it was not really a proof after all.

Several of the people that attended the recent meeting have publicly expressed some degree of relief because it appears that there is at least some level of understanding of the overall concepts of the proof now, and they apparently look promising. Others have stated that the meeting did little to build on what had already been known. A workshop follow-up has been scheduled this summer, in Kyoto, which will likely see Mochizuki attending and perhaps offering some new insights on his work so that others may come to understand and perhaps one day verify his proof.

**More information:** via [Nature](#), [Newscientist](#)

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