Shinichi Mochizukithe –the Japanese mathematician

Mathematical proof that rocked number theory

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Mochizuki is a Japanese mathematician working in number theory and arithmetic geometry. He is one of the main contributors to anabelian geometry. His contributions include his solution of the Grothendieck conjecture in anabelian geometry about hyperbolic curves over number fields. Mochizuki has also worked in Hodge–Arakelov theory and p-adic Teichmüller theory.

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ABC Conjecture

Theory

For any real number $\epsilon > 0$, there exists a real number $K_\epsilon > 0$ such that

$$c < K\epsilon \cdot \mathrm{rad}(abc)^{1+\epsilon}$$

for any *abc* triple (a, b, c).

The conjecture says that *abc* cannot have *"too many"*repeated prime factors of *"high multiplicity"* if $a + b = c,\ gcd(a, b) = 1$.

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Example

For now the highest-quality triple (with a particularly small radical relative to c) is given below:

$a = 2,\ b = 3^{10} \cdot 109 = 6436341,\ c = 23^5 = 6436343$
$\mathrm{rad}(abc) = 2 \cdot 3 \cdot 109 \cdot 25 = 15042$

Controversy

To quote **NATURE**'s 03 April 2020 article headline:

"Mathematical proof that rocked number theory will be published".

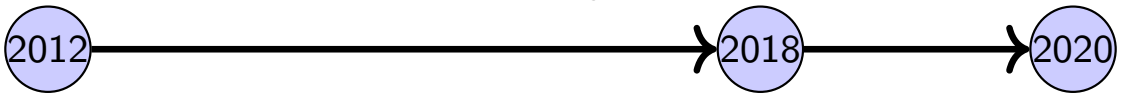
"After an eight-year struggle, embattled Japanese mathematician Shinichi Mochizuki has finally received some validation. His 600-page proof of the abc conjecture, one of the biggest open problems in number theory, has been accepted for publication.

Acceptance of the work in Publications of the Research Institute for Mathematical Sciences (RIMS) is the latest development in a long and acrimonious controversy over the mathematician's proof.

(..) The paper "will have a big impact (..)"

Proof chronology

The controversy continues..



- 2012, Mochizuki posted four massive papers online, claiming to have solved the *ABC Conjecture*.
  - Modest circumstances of publication of such an important work –'secret' announcement on the home page.
  - Written in an impenetrable, idiosyncratic style –"like you might be reading a paper from the future, or from outer space"
- 2018, Two highly respected mathematicians allegedly found a flaws in Mochizuki's proof.
- 2020, Acceptance of the work in Publications of the Research Institute for Mathematical Sciences (RIMS).
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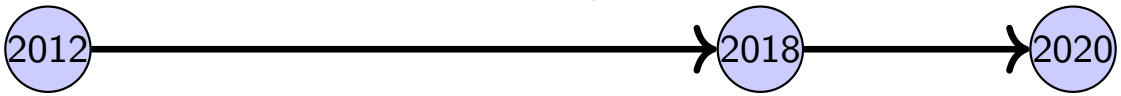

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Japan

Japan is the eleventh-most populous country in the world, as well as one of the most densely populated and urbanized. About three-fourths of the country's terrain is mountainous, concentrating its population of 125.36 million on narrow coastal plains. Japan is divided into 47 administrative prefectures and eight traditional regions. The Greater Tokyo Area is the most populous metropolitan area in the world, with more than 37.4 million residents.

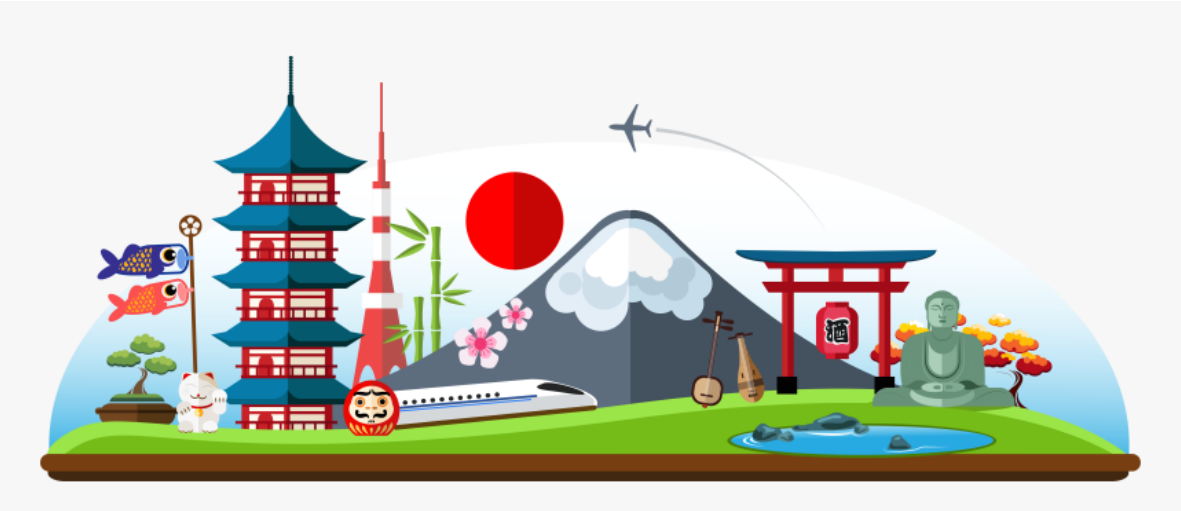

Figure: Art depicting symbiosis of Japanese tradition and technology

Kyoto University

Kyoto University (京都大学, Kyōto daigaku), or KyotoU (京大, Kyōdai), is a public research university located in Kyoto, Japan. Founded in 1897, it is the second oldest university in Japan, one of the former Imperial Universities, the first three Designated National University and selected as a Top Type university of Top Global University Project by the Japanese government.

KyotoU is usually ranked amongst the top two in Japan, the top ten in Asia, and the world's top thirty institutions of higher education.

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Shinichi Mochizuki spent two years at Harvard and then in 1994 moved back to Japan to join the Research Institute for Mathematical Sciences (RIMS) at Kyoto University in 1992, and was promoted to professor in 2002.


Shinichi Mochizuki of University of Kyoto

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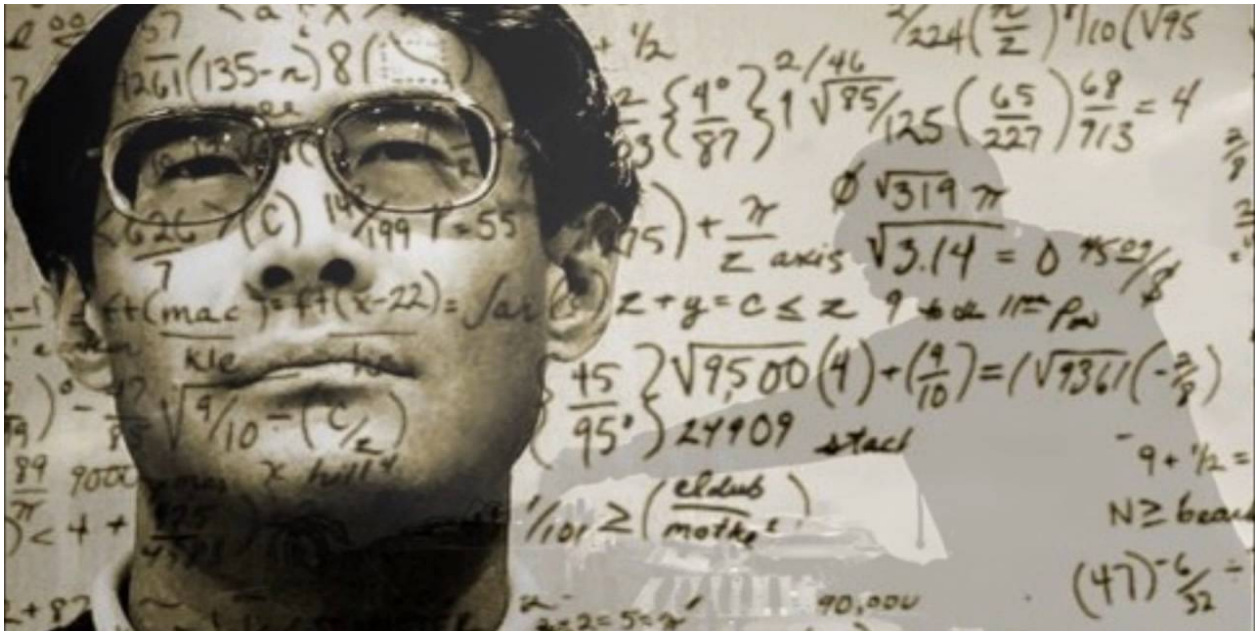
Thanks for the attention!



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