ABOUT THE STUDY OF IUT AND NEW IUT PRIZES

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The IUT papers by S. Mochizuki were made public in August 2012. In March 2021 they were published by European Math Society Publications of RIMS. The decision to publish the IUT papers was made by a specially appointed editors including M. Kashiwara (Kyoto and Chern prizes), T. Mochizuki (Breakthrough prize), A. Tamagawa (pioneer and top expert in anabelian geometry), H. Nakajima (IMU president in 2022–2026). Since the IUT theory is substantially using anabelian geometry in which 90% of world experts are based in Japan, it was most natural to submit the paper to the journal which can easily arrange expert opinions. Many mathematicians, including Euler and Grothendieck, published their best papers in the journals of their departments/institutes.

The IUT papers have been checked, verified of studied by

(i) a group of appointed referees, for 8 years, with 10 revisions of the original paper;

(ii) about 20 mathematicians of many nationalities who had sent more than 1000 of their questions and remarks to the author, all answered and taken into account when relevant;

(iii) RIMS seminar on IUT in 2015;

(iv) international 2015 IUT workshops, Oxford;

(v) international 2016 IUT Summit, RIMS, Kyoto;

(vi) two RIMS seminars on IUT in 2018/2019 and in 2019/2020;

(vii) 2020/2021 Japan–France online seminar on IUT involving researchers from seven countries;

(viii) international 2021 online RIMS workshop on IUT;

(ix) international 2024 Tokyo IUGC conference.

Mathematicians from various countries potentially able to study the theory were invited, more than once, to attend these workshops.

International 2025 IUT workshop will take place at RIMS.

See this page and this page of the author of IUT for the list of various texts and activities organised to study IUT; see also this page for the list of surveys of IUT, talks, videos, workshops and seminars. They include two recent surveys of IUT by its author. A popular book about mathematics related to IUT for the general audience by F. Kato was published in Japanese in April 2019 and was awarded a national prize.

No valid math evidence of any serious fault in IUT, confirmed by professionals, has been found by anyone. Non-major oversights have been found and corrected. To this day there remains no mathematically substantive reason whatsoever to doubt the validity of IUT.

In July 2022 an extension of IUT which for the first time proves effective abc inequalities and contains a new proof of FLT in this paper by 5 authors was published.

Several further extensions of IUT are expected to be completed as preprints and submitted to journals.

The IUT theory is a major development in number theory. Its published theorems are among the strongest math results. As always, for a mathematician to follow new fundamental developments one needs to study

relevant prerequisites: for Deligne's proof of GRH in positive characteristic one needs to know the relevant work of Grothendieck, for non-abelian linear developments in the Langlands program one needs to master linear representation theory, etc. To gain a good understanding of IUT, one has to invest an adequate large amount of time in a study of Grothendieck's theory of étale fundamental groups and then several key developments of anabelian geometry. These prerequisites of IUT cannot be digested during a relatively short period of time.

There are cases of PhD students who started from almost zero level in arithmetic geometry and succeeded during their PhD years to learn the subject area and IUT and even made valuable suggestions about strengthening the theory. Therefore, it is natural to expect that professional number theorists can succeed in the study of IUT if they apply sufficient appropriate efforts and invest appropriate time during 2-3 years, if their heads of departments are happy to support such efforts.

In 2012 and nowadays many countries have no active experts in anabelian geometry for hyperbolic curves over small fields. For example, there are no experts in English speaking countries, with a couple of exceptions in the UK. At the same time, almost all vague or ignorant negative remarks about IUT on the internet originate from English speaking countries from people lacking any expertise in anabelian geometry and sometimes even in aritihmetic geometry overall. Any claim that there are substantial mistakes in IUT must be, in accordance with the ethical professional standards and in line with Article 6 of the European Math Society Code of Practice should be supported by mathematical texts containing full proofs. To prevent the abuse of online collections such as archiv, these full texts should have passed peer review. Does this absurd attitude to IUT in those countries correlate with the well known negative developments associated to social media, affecting local mathematicians? Conversations with many mathematicians revealed another reason for this situation: the Grothendieck's heritage had not been really digested by number theorists, while mathematicians were made to accept the validity of Deligne's proof that only few dozens understand 50 years after it was published.

Since 2015, Scholze kept making aggressive public claims about some problems with IUT, never providing any concrete math evidence, despite mine and other mathematicians requests. He and Stix produced a short report in March 2018 about their take on IUT. The Scholze–Stix report is about their own oversimplified version of IUT, the version fundamentally different from IUT. Their travesty of IUT easily leads to a contradiction, but this has nothing to do with the original IUT theory. The report included no proofs but sentences such as "it seems to us". Their mistakes were explained in this report, this document, this relatively elementary large paper and this down to earth large paper. The editors of the special volume of PRIMS containing the IUT papers were fully aware of this situation. Despite the well known standard rules of math behaviour, as well as attempts of several mathematicians to attract the attention of the German mathematicians and MPIM–Bonn, to the need of ethical behaviour, those two mathematicians have failed to follow. In der deutschen Mathematik geschahen sehr ungewöhnliche Dinge. Moreover, after Scholze had got his award in 2018, he abruptly stopped all the communication with the IUT experts. In August 2023 the author of IUT made public this short report which includes further details.

The set of papers with full proofs about any mistakes in IUT and which passed peer review is empty. A published paper of this kind may receive the $1m IUT Challenger prize, but so far not a single attempt to nominate a paper for that prize is known. And new contributions to IUT can be nominated for the IUT Innovator Prize.