

# ***Joetsu Seminar of Research on Mathematics Education in Tokyo***

## *Perspective of Japanese Research on the Teaching and Learning of Proof*

上越数学教育学セミナー in Tokyo

～日本の証明学習研究の展望～

数学教育学研究において世界的に著名なニコラ・バラシェフ先生をお招きし、ご講演いただくとともに、証明学習研究に関するセミナーを東京で開催することになりました。バラシェフ先生は、近年、研究者の SNS である ResearchGate で証明研究者の国際的なコミュニティを立ち上げ研究者間の議論を活性化するなど<sup>1</sup>、現在も証明研究を第一線で支えていらっしゃいます。

セミナーでは、形式ばらずにいろいろな話し合いができればと考えています。お誘い合わせの上、是非ご参加ください。なお、セミナーは基本的に英語で進める予定です。

**Date:** Thursday 13 September 2018

**Place:** 509 A/B (5<sup>th</sup> floor)  
CIC Tokyo (1 min from JR Tamachi Station)  
<http://www.cictokyo.jp/access.html>  
東京工業大学キャンパス・イノベーションセンター  
〒108-0023 東京都港区芝浦 3 丁目 3-6

### **PROGRAM**

- 10:00 – 12:00 Nicolas Balacheff (Grenoble, France)  
*The complexity of the epistemological genesis of mathematical proof*
- Lunch
- 13:30 – 14:30 Takeshi Miyakawa (Joetsu University of Education)  
*Mathematical proof in Japan: overview and a brief history*
- 14:30 – 15:30 Yusuke Shinno (Osaka Kyoiku University)  
*Some cultural and linguistic issues on the teaching of mathematical proof*
- 15:30 – 16:30 Kotaro Komatsu (Shinshu University)  
*Task design for developing students' recognition of the roles of assumptions*
- 16:30 – 17:30 Koji Otaki (Hokkaido University of Education)  
*Proving activities on study and research paths*

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<sup>1</sup> <https://www.researchgate.net/project/Proof-in-Mathematics-Education-Reflection-and-Institutionalization>

(ご講演要旨)

Nicolas Balacheff

LIG, Univ. Grenoble Alpes, CNRS, Grenoble INP, France

**Title:** *The complexity of the epistemological genesis of mathematical proof*

**Abstract:** Early learning of mathematics is first rooted in pragmatic evidences or learners' confidence in the facts and procedures taught. Nonetheless, learners develop a true knowledge which works as a tool in significant problem situations, and which is accessible to falsification and argumentation. As teachers know, they could validate what they claim to be true, but based on means in general not conforming to mathematical standards. Teaching these standards requires an evolution of their understanding of what can count as a proof in the mathematical classroom, as well as an evolution of their mathematical knowing. This claim is discussed from the perspective of modeling the learners ways of knowing (the model  $cK\phi$ ), within the framework of the theory of didactical situations, bridging the semiotic system they use, the type of actions they perform and the controls they implement either to construct or to validate the solutions they propose to a problem.

(バラシェフ先生関連ウェブページ)

- <https://nicolas-balacheff.blogspot.com/>
- [https://www.researchgate.net/profile/Nicolas\\_Balacheff](https://www.researchgate.net/profile/Nicolas_Balacheff)
- <https://scholar.google.com/citations?user=G15uFzAAAAAJ&hl=ja>