

## PUBLIC LECTURE EVALUATION

### Masaryk University

<b>Faculty</b>	Faculty of Science
<b>Procedure field</b>	Mathematics – Geometry
<b>Applicant</b>	doc. Anton Galaev, Dr. rer. nat.
<b>Lecture date</b>	6.3.2024
<b>Lecture topic</b>	Holonomy groups in Differential Geometry
<b>Persons present</b> (number)	12 onsite + 35 online
<b>Designated evaluators</b> (board members)	prof. RNDr. Josef Janyška, DSc. (on site) prof. RNDr. Jan Slovák, DrSc. (online) prof. RNDr. Miroslav Doupovec, CSc. (on site) prof. RNDr. Vladimír Souček, DrSc. (online) prof. Anna Maria Fino, Ph.D. (online)

In the beginning of the lecture, A. Galaev first explained what holonomy groups of pseudo-Riemannian manifolds are. The holonomy group is an important invariant of a metric since it gives information about the curvature and parallel objects on the manifold. After an introduction to the subject, he explained results about the holonomy groups of the Levi-Civita connection on pseudo-Riemannian manifolds with the stress to the case of Lorentzian manifolds. He discussed some applications, e.g., applications to the Einstein equation. Then he spoke about a generalization to the case of superconnections on supermanifolds. Further, he discussed recent results, joined with his PhD students, about holonomy of Weyl connections and metric connections with torsion on Lorentzian manifolds. Finally, he mentioned that there is also another notion of holonomy in differential geometry: the holonomy pseudogroup of a foliation on a smooth manifold. At the end of the lecture he explained results about characteristic classes of these pseudogroups.

There was a lively discussion after the lecture including questions from world-leading experts among the participants. Anton Galaev clearly demonstrated in his talk and in the discussion that he belongs to world-leading personalities in a hot area of research.

Aside the international members of the committee, the expository lecture by Anton Galaev was attended by several world-leading personalities, e.g. Ilka Agricola, Dmitri Alekseevsky, Berndt Amann, Eduardo Garcia-Rio, Lorenz Schwachhöfer, etc. It is very rare to see such a concentration of experts even at the best international conferences.

## Conclusion

The lecture delivered by Anton Galaev, entitled "Holonomy groups in Differential Geometry" and delivered as part of the professor appointment procedure, **demonstrated** sufficient scholarly qualifications and pedagogical capabilities expected of applicants participating in a professor appointment procedure in the field of Mathematics – Geometry.

The lecture took place in a hybrid form at 4.00 p.m. in the lecture room M1 (zoom link: <https://cesnet.zoom.us/j/97257106710>). The above-mentioned members of the board attended the lecture and provided its evaluation. All designated evaluators are familiar with the text of the evaluation and agree with it.

Date: 6.3.2024

Josef Janyška

Miroslav Doupovec