LÁSZLÓ JENKOVSZKY

Bogolyubov Institute for Theoretical Physics, Nat. Acad. of Sci. of Ukraine
(14b, Metrolohichna Str., Kyiv 03680, Ukraine; e-mail: laszlojenkovszky@gmail.com)

EDITORIAL FOREWORD

Non-Euclidean Geometry in Modern Physics and Mathematics is a series of biennial conferences initiated by the Bogolyubov Institute for Theoretical Physics of the National Academy of Sciences of Ukraine in 1997, dedicated to the heritage of János Bolyai, Carl Friedrich Gauss, and Nikolai Ivanovich Lobachevski (BGL, alphabetically), and held at various sites connected with the founders of the new geometry; for history see:
https://indico.cern.ch/event/586799/page/8964-former-blg-conferences.

The series started with a conference held in Uzhgorod (Ungvár, birthplace of the present Editor) in 1997. The continuation and subsequent success to large extent was due to the format of the conferences: their subject includes mathematics, physical applications and history. The mystery of the discovery by Bolyai, Gauss, and Lobachevsky rests on the fact that, while the mankind lived for more than two thousand years in belief that parallels can never cross, three great men simultaneously and independently created a new (non-Euclidean) world in which space is not flat anymore.

The discovery and its reception were full of drama: while the publication of Lobachevsky's original paper was rejected (declined) by M.V. Ostrogradski, and János Bolyai published his results merely as an Appendix to his father's (Farkas) textbook, Gauss is generally accepted to be one of the discoverers of the new geometry although he did not publish a single paper on the subject (a unique situation, interesting for historians of science). The success of our conferences rests also on the fact that we avoided confronting BGL concerning their priority.

We have had enthusiastic and highly professional scientists among the founders and supporters of this

Venue of the Conference "XII Bolyai–Gauss–Lobachevsky (BGL-2024): Non-Euclidean Geometry in Modern Physics and Mathematics" (Budapest, Hungary)

series of conferences. Among them were Member of the Hungarian Academy of Sciences István Lovas and two leading experts in the non-Euclidean geometry and its history, namely, Professor N.A. Chernikov (Dubna and Kazan) and Elemér Kiss (Temesvár, Transilvania). All three had left this world, and we feel deep respect for their role in raising high this series of conferences.

Following the first BGL meeting in Uzhgorod, it was subsequently held in Nyiregyháza (Hungary, 1999), in Marosvásárhely (Targu-Mures, Romania, 2002), Nizhni Novgorod (Russia, 2004) *etc.*

The latest conference (May 1–3, 2024) was hosted by the DOMUS Pension of the Hungarian Academy of Sciences, providing accommodation and a nice conference room. We are grateful to the Academy and its Wigner Institute for their warm hospitality and help.

We thank all participants for their contributions – oral or written – collected in these Proceedings.

The next BGL conference is planned to be held in Ukraine, in Lviv (Lwów, Lemberg) in 2026.

We invite Gauss's co-patriots to be more active at future BGL conferences. We also welcome new ideas and proposals concerning the organization of future BGL meetings.

The present issue of UJP contains contributions to the latest BGL conference, held in May 2024 in Budapest, ordered according to the dates of their submission. We have included also a related invited contribution by authors from the Bogolyubov ITP, Kyiv.

An additional information about BGL can be found, in particular, in the following issues:

1. Non-Euclidean Geometry in Modern Physics. Proceedings of the first BGL, held in Uzhgorod in 1997. Edited by L. Jenkovszky.

2. Acta Physica Debrecina, Tomus XLII. Edited by Zoltán Trócsányi, Debrecen 2008.

3. Non-Euclidean Geometry in Modern Physics, (BGL 3). Edited by I. Lovas, EP Systema-Debrecen-Hungary-2003.

4. Non-Euclidean Geometry in Modern Physics and Mathematics. Edited by L. Jenkovszky and G. Polotovskiy, Nizhni Novgorod–Kiev, 2004.

5. Methods of Non-Euclidean Geometry in Physics and Mathematics. Proc. of the IX International Conference BGL-9, Minsk, November 2015.

6. Non–Euclidean, Noncommutative Geometry and Quantum Physics. XI Bolyai–Gauss–Lobachevsky (BGL-2019) Conference held in Kyiv in 2019. *Ukr. J. Phys.* **64**, No. 11–12 (2019).