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A Meeting of Great Minds, Sophus Lie and John Nash throughout their Works

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It is well known that Marius Sophus Lie (1842-1899) and John Forbes Nash (1928-2015) are great mathematicians. Sophus Lie comes from Norway and John Nash from United States of America. Their stories have certain resemblances and remarkable relations. This editorial would emphasize some of them. When they have started their university studies, their respective first interests were not mathematics.

That is to say, Lie has been in Astronomy and Nash in Chemical Engineering. Whereas, when they worked on mathematics, the first had Lobatchevski award in 1897 and the second, Nobel prize 1994 and Abel award 2015 (Niels Abel is the uncle of the wife of Sophus Lie: Anna Birch). In addition, their contributions in geometry are considerable, particularly in differential equations. Lie worked on transformation groups relative to partial differential equations, in other words, on Lie groups and on special non-associative algebras named Lie algebras. Nash discovered an important isometrically embedding theorem for a C^k-Riemannian manifold into an Euclidian space (k=1,3,4…), by studying an undetermined partial differential equations. Now, the methods they used offer us an important tool for continuing researches in differential geometry and in other fields cf. [1-9]. Next, these exceptional persons have continued to put more efforts into their mathematics works, even if they had a serious health problem in the middle of their careers. We hope that several mathematicians continue to make profits from results of Lie and Nash for the mathematics's promotion.

This special issue "Recent Advances of Lie Theory in Differential Geometry, in memory of John Nash" honored both Sophus Lie and John Nash as well as their works. John Nash died recently with his wife in a car crash on May 23, 2015. We are grateful regarding their contributions in differential geometry, generally in mathematics.

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