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(4th edition)
Geometric Function Theory in Several Complex Variables and Complex Banach Spaces

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Solutions to the Loewner partial differential equation in infinite dimensions

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Abstract

Let X be a separable reflexive complex Banach space and h be a Herglotz vector field with $Dh(0, t) = A \in L(X, X)$.

In this talk,

(1) We consider the connection of any standard solution and a biholomorphic standard solution to the Loewner PDE.

(2) As a corollary, we obtain the connection between any standard solution and the canonical solution of the Loewner PDE, which gives an improvement of a theorem due to Graham, Hamada, Kohr and Kohr in 2013 (the converse result is also valid).

(3) We obtain a necessary and sufficient condition so that a standard solution of the Loewner PDE can be connected to the canonical solution of the Loewner PDE by a linear mapping, which gives an improvement of a theorem due to Graham, Hamada, Kohr and Kohr in 2013 (the converse result is valid).

(4) As a corollary of the above results, we also obtain a generalization of the results by Becker in 1973 and Duren, Graham, Hamada and Kohr in 2010 to infinite dimensions.

This is a joint work with Gabriela Kohr and Mirela Kohr.