Oberseminar Funktionentheorie

Freitag, 13. November 2019, 10.15 Uhr, Raum 40.03.003

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*Geometric properties of nonlinear resolvent for a
semigroup of analytic self-maps of the unit disk*

Abstract. It is well known that a continuous one-parameter semigroup of analytic self-maps $F_t(z)$, $t > 0$, of the unit disk in the complex plane is reproduced by its infinitesimal generator
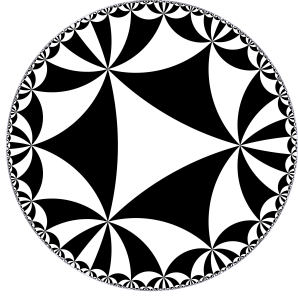
$$f(z) = \lim_{t \to 0+} \frac{z - F_t(z)}{t}$$

as the solution to the autonomous ODE

$$u'(t) + f(u(t)) = 0$$

with the initial condition u(0)=z. We concentrate on the case when $f(0) = 0$ so that F_t has the Denjoy-Wolff point at 0. We are interested in the nonlinear resolvent $z = J_r(w)$ defined by the equation $z + rf(z) = w$ for each w with $|w| < 1$ and $r > 0$. Our main theorem states that J_r is hyperbolically convex and satisfies an inverse Loewner equation. In particular, if $f(z)/z$ lies in the sector $|\arg w| < c$ with $c < \pi/2$, we will see that J_r has a $(\sin c)$–quasiconformal extension to the complex plane. This is joint work with Mark Elin and David Shoikhet.

Alle Interessenten sind herzlich eingeladen !

J. Grahl   D. Kraus   O. Roth   S. Schleißinger

Lehrstuhl Mathematik IV
– Funktionentheorie –

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