Seeing the Monodromy Group of a Blaschke Product

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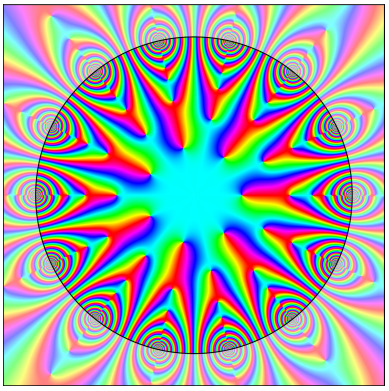
While pictorial representations of real functions by their graphs are widely used for centuries, visualizations of complex functions are not so common. This has changed during the last two decades, when the technique of *domain coloring* became popular, which depicts a function f as an image on its domain by color-coding the values $f(z)$. Depending on the objective of the visualization, different color schemes are in use. The figure shows a *phase plot* of a Blaschke product.

The talk demonstrates how phase plots and their modifications can be used for exploring analytic and meromorphic functions. We explain how basic properties of a function can be recovered from its phase plot and present images of special functions. Then we introduce *phase diagrams* and the *phase flow*, which will be applied to construct Riemann surfaces of (inverses of) finite Blaschke products. Appropriate color schemes allow one to read off (the generators of) their monodromy group. Finally we discuss how one can "see" that a given Blaschke product is a (non-trivial) composition of two Blaschke products.



phase plot of a Blaschke product