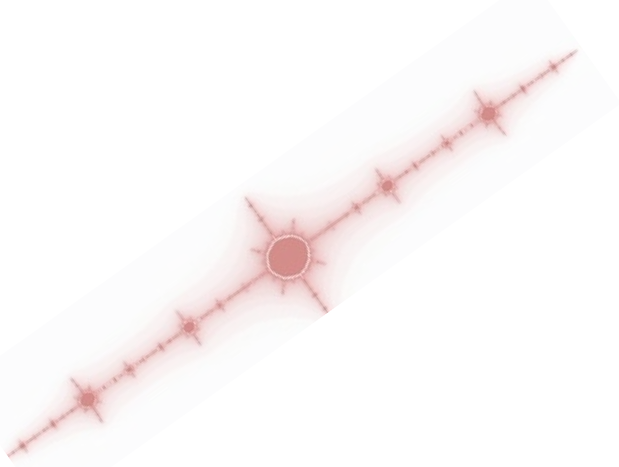
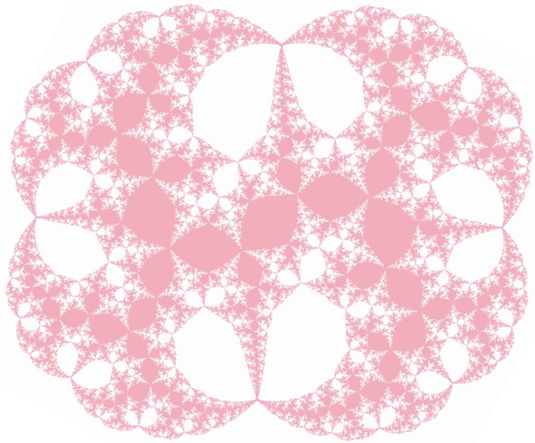
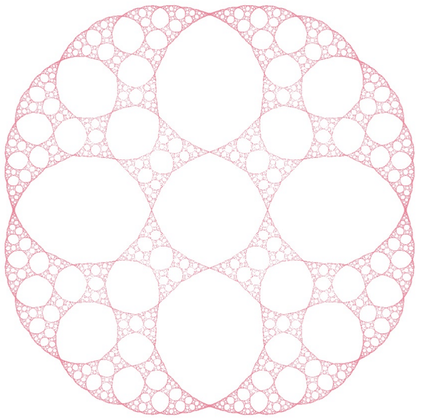
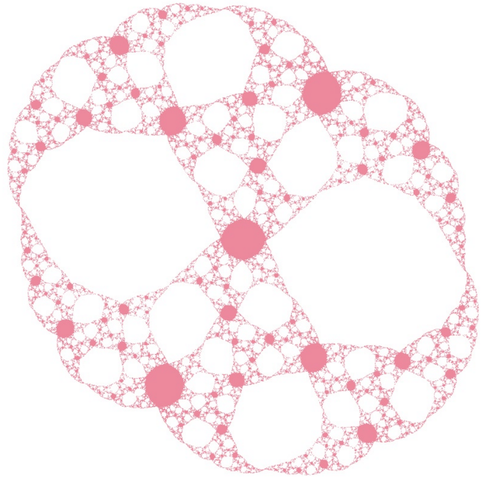
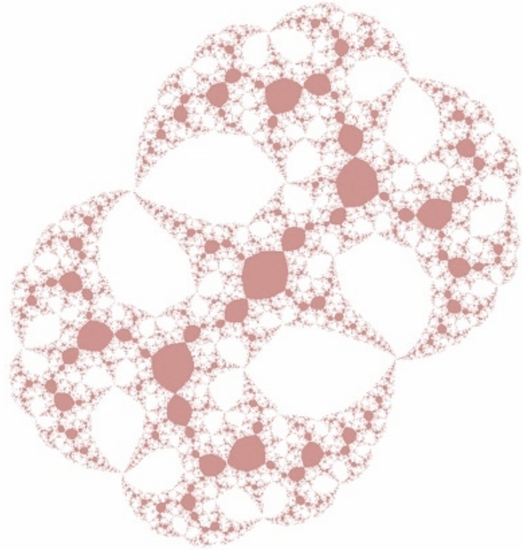




Julia sets with Ahlfors-regular conformal dimension one

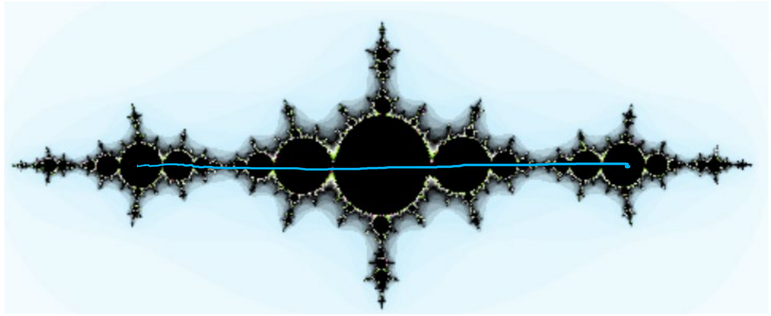


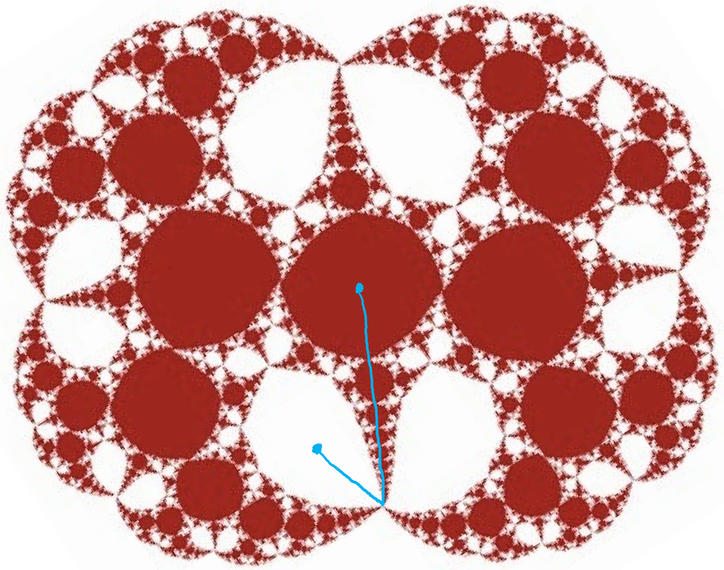
Insung Park (ICERM)
Postdoc, Complex Dynamics



MSRI 5-min talk
Jan. 31. 2022

A rational map is a **crochet map** if
any pair of Fatou components can be joined
by a countable chain of touching Fatou components.





Theorem. (P.)
For a post-critically finite
hyperbolic rational map f,

f is a crochet map
$\Leftrightarrow \mathrm{ARconfdim}(J_f) = 1.$

Sullivan's dictionary

ARconfdim$(X) := \inf\{\ \mathrm{H.dim}(Y) \mid X \sim_{qs} Y \text{ and } Y \text{ is AR}\ \}$

Thm. (Carrasco-Mackay) For a hyperbolic group G,
$\mathrm{ARconfdim}(\partial_\infty G) = 1$ iff
G has a hierarchical decomposition with
- elementary edge groups and
- elementary or virtually Fuchsian vertex groups

Eg: post-critically finite polynomials, Newton maps,
critically fixed rational/anti-rational maps,
matings with core entropy zero polynomials.

Techniques used in the proof:
- Conformal energy (D. Thurston, Pilgrim)
- Crochet decomposition (Dudko, Hlushchanka, Schleicher)
- Finite subdivision rules (Cannon, Floyd, Parry)