

- Thm (Siegel) $\theta \notin \mathbb{Q}, \theta = \frac{1}{q_0 + \frac{1}{q_1 + \dots}}$

$\sup a_i < \infty$ (bounded type)



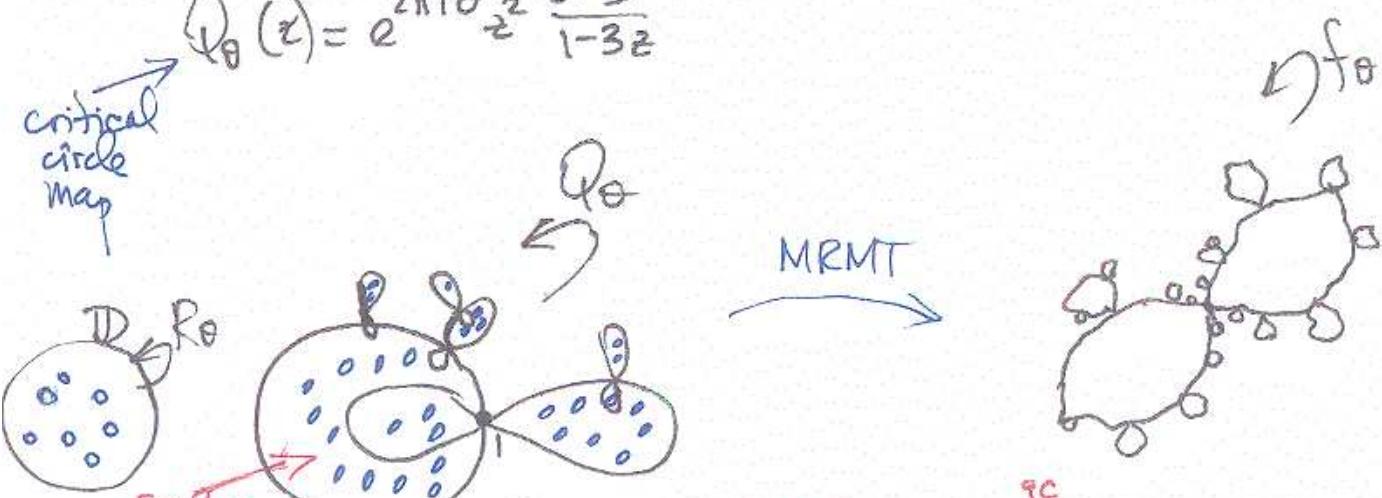
$$f(z) = e^{2\pi i \theta z} + \dots \text{ is linearizable.}$$

- Quadratic Siegel disks of bdd type

Thm (Petersen, different pf - MY) $f_\theta(z) = e^{2\pi i \theta z} + z^2$
 $J(f_\theta)$ is l.c., $\text{meas}(J(f_\theta)) = 0$

- First step to understanding geometry of $J(f_\theta)$ -
q.c. surgery of Douady, Shishikura & others

$$Q_\theta(z) = e^{2\pi i \theta z} \frac{z-3}{1-3z}$$



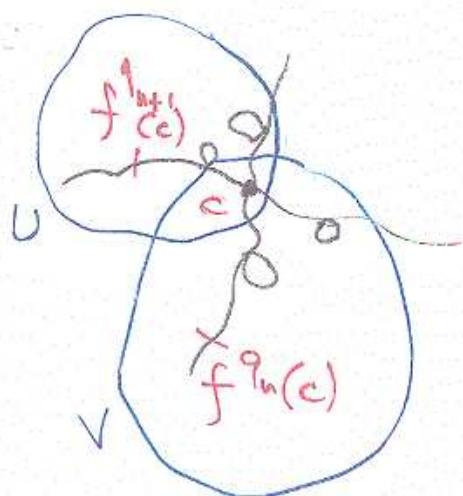
Thm (real a priori bounds) Swiatek, Herman, Yoccoz
 $Q_\theta|_{TP} \underset{q_s}{\sim} R_0$

- Universal scaling for f_α

(2)

$$\text{Ex. } \theta_* = \frac{\sqrt{5}-1}{2} = \frac{1}{1+\frac{1}{1+\frac{1}{1+\dots}}}$$

- Renormalization conjectures (Widom, Manton - Nauenberg '83, Mackay - Pritchard '86)



$$R_f^n = (f^{q_n}|_U, f^{q_{n+1}}|_V)$$

rescaled

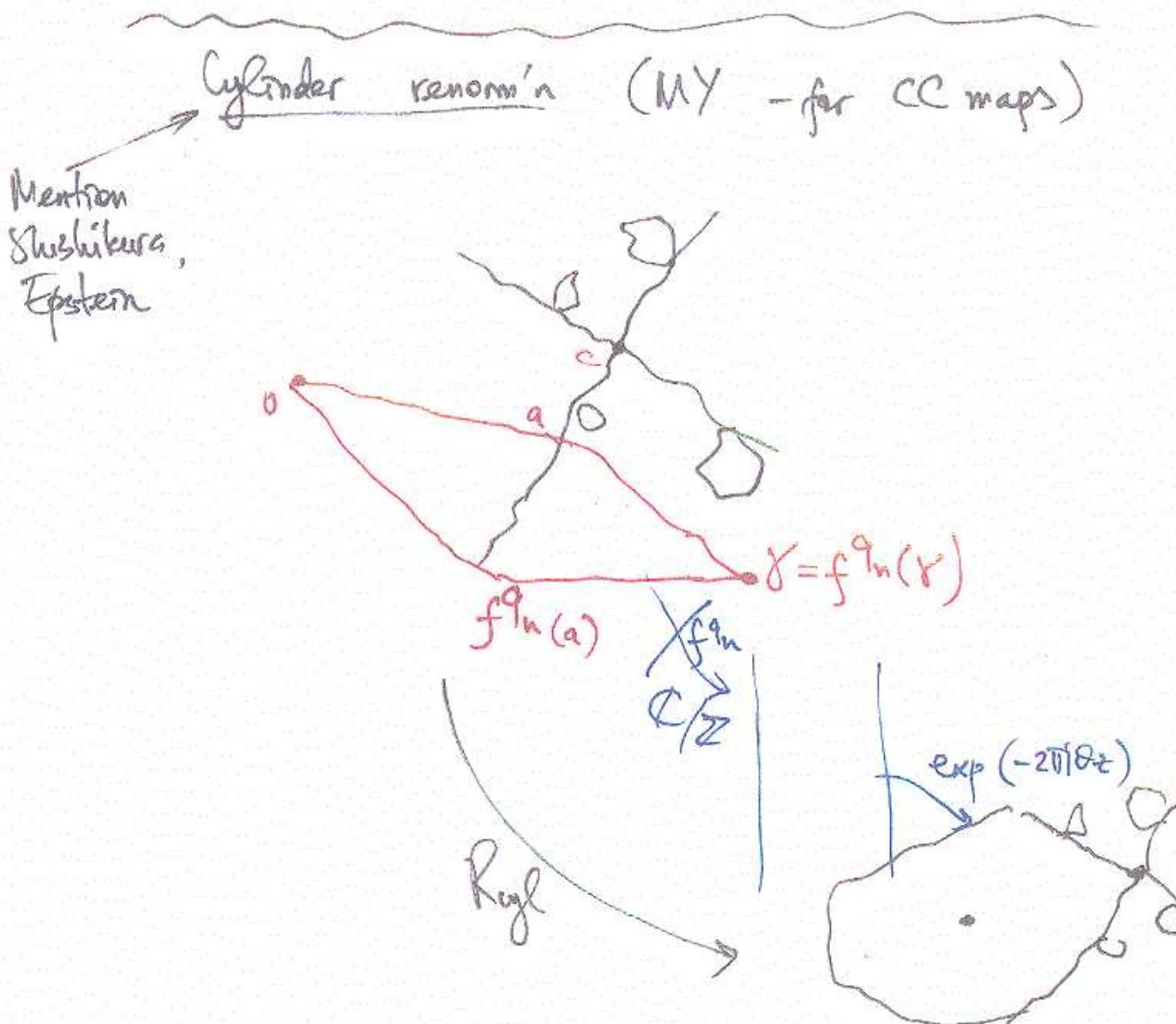
has a hyperbolic attractor

History: computer-assisted proof for θ_*
of 3 fixed pt (Strennemann, ...), rigorous proof McMullen

NO COMPUTER-ASSISTED PF OF HYPERBOLICITY
(SPECULATE)

- A few words about McMullan's work - ③

c is a measurable depth of $K(f_0)$



(4)

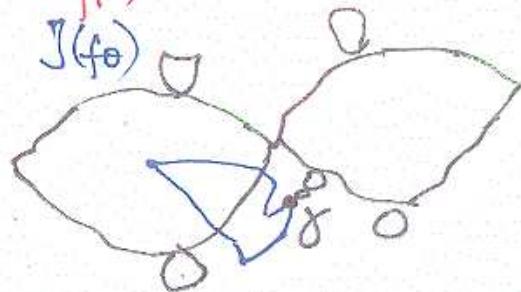
Prop. $f_0 \rightarrow \infty$ Rayl renorm'le for
 θ of bdd type

• 3 Rayl fixed pt for each $\theta = \frac{1}{N+1}, \frac{2}{N+1}, \dots$

projection of McMullen's f. pt

true for CC Map Q_0 + surgery
or

(observation of Buff)
using l.c. of $J(f_0)$

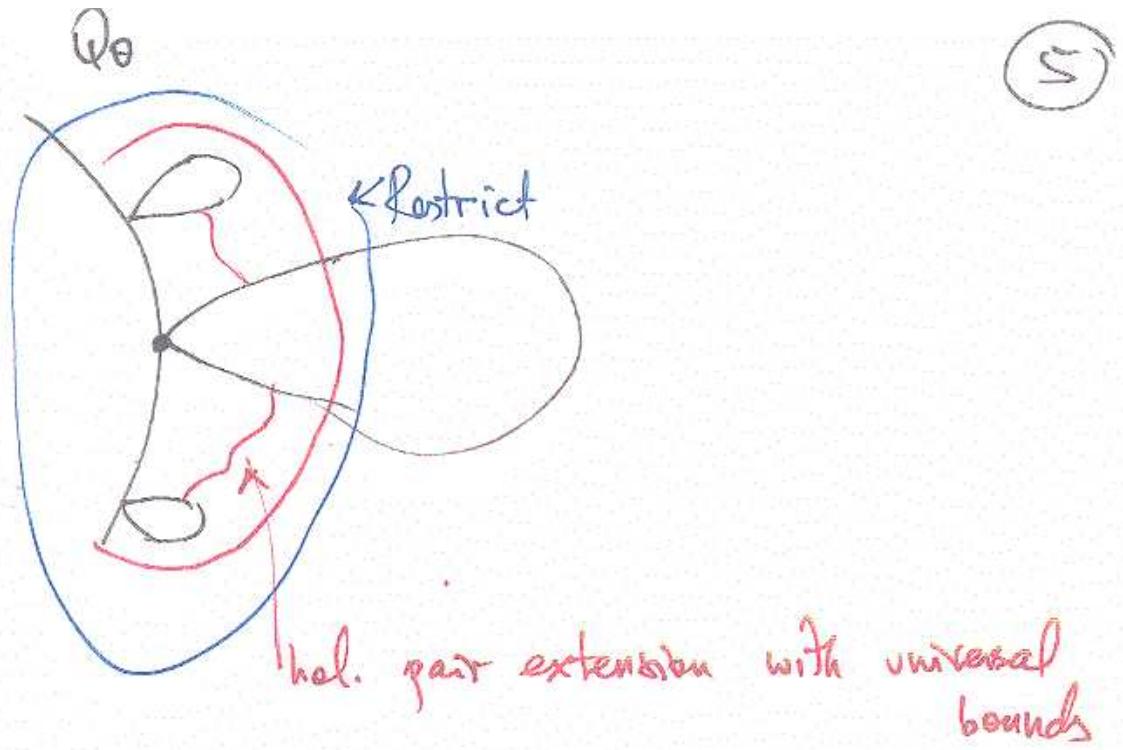


Hyperbolicity?

What can be done by hand

- Rayl is an analytic operator in a nbhd of each fixed pt
 - + compact

Pf. Complex bounds of M^Y +
surgery



- Rngl has an expanding direction
if elementary. If $v(z) = v'(0)z + o(z)$ is
a vector field,

$$|(\mathcal{L}v)'(0)| > \lambda |v'(0)|.$$
- Can prove no neutral dir's

- Candidate stable mfld - known. (6)

Inou - Shishikura $\Rightarrow \exists N_0 \gg 1$, s.t.

$$\forall N \geq N_0, \quad \theta_N = \frac{1}{N+1} \dots$$

\hat{f}_N is hpp. with 1-dim unstable dir'n.

- Work with Gaidashov for $N=1$

Comment on positive measure

Douady's program

$$\theta = [N, N, \dots, N, \infty, N, \dots, N, \infty, N \dots]$$

Chéritat : Inserting ∞ can be done without loss of measure.

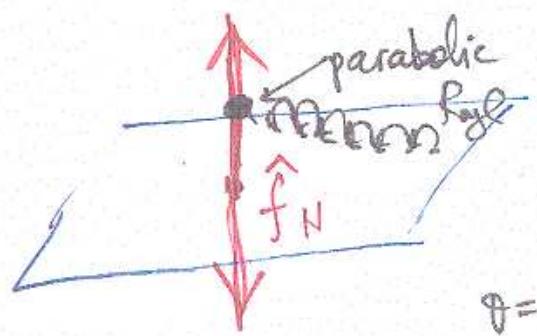
Inserting 1's after ∞ - always loses measure.

Want to lose little - for this need to know that the basin of parabolic

$$[N, N, \dots, N, N_1, N, \dots, N, N_2, \dots] \infty$$

occupies a lot of measure

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$$\Phi = \{\dots, N, \dots, N, \infty\}$$

