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MR805833 (87e:58117) 58F10 (30D05 58F11)

Ghys, Étienne (F-LILL); **Goldberg, Lisa R.** (1-CUNYG); **Sullivan, Dennis P.** (1-CUNYG)

On the measurable dynamics of $z \mapsto e^z$.

Ergodic Theory Dynam. Systems **5** (1985), *no. 3,* 329–335.

Measure-theoretic properties of the complex exponential map $E(z) = e^z$ are studied. In particular, the exponential map is shown to be recurrent with respect to the full orbit equivalence relation generated by E, and to have no nontrivial topologically conjugate deformations. A trivial deformation is a map in the 3-complex-parameter family $z \mapsto e^{az+b} + c$ $(a, b, c \in \mathbf{C})$. The recurrence derives from this by the same type of argument (but easier) as in Sullivan's proof of the nonexistence of wandering domains for rational maps [Ann. of Math. (2) **122** (1985), no. 3, 401–418]: a wandering set of positive measure would give a nontrivial invariant line field, whence nontrivial quasiconformal deformations. Recurrence is then used to show that the fibres of the map from $\mathbf{C}$ to the symbolic dynamics space, constructed for the exponential map by R. L. Devaney and M. Krych [Ergodic Theory Dynamical Systems **4** (1984), no. 1, 33–52; MR0758892 (86b:58069)], have measure 0. A different argument has to be used for fibres over periodic sequences.

Reviewed by *M. Rees*

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