

Rufus Bowen (1947-1978)

Last summer Rufus Bowen died unexpectedly from natural causes at the age of thirty-one. His mathematical career was interrupted in its early prime, but had already shown a beautiful development. His list of publications runs to almost half a hundred and includes two monographs ([24], [40]).

Bowen's first note was written when he was seventeen. As an undergraduate he found, while participating in Smale's seminar at Berkeley, substantial results related to dynamical systems. He became well known by his early twenties among the circle of Soviet mathematicians for his work on Markov partitions ([8], [18], [30]).

Bowen's construction of Markov partitions allowed a symbolic description of the recurrence set of any generic diffeomorphism satisfying a uniform hyperbolicity on the periodic points. There are many corollaries of Bowen's symbols, and by now the structure of these structurally stable dynamics is considered to be quite well known ([9], [14], [16], [17]).

Bowen's papers on this construction are not long, but not easy to read casually. The proofs are constructed carefully with details included.

In a long series of dynamical papers, many quite elegant, Bowen studied diverse questions. Often, when a precise geometrical estimate was needed, out came the Markov partitions and the concomitant finite description which solved the problem. A recurring theme was that the growth rate of some geometrical quantity equals the topological entropy of the dynamical mapping ([10], [11], [12], [20]).

Earlier, Bowen had bridged a gap (more present in the West than in the Soviet Union) between topological dynamics and ergodic theory by constructing the measure that maximized the entropy from the geometry of the hyperbolic transformation. A fruitful development followed with many participants ([11], [22]).

Another contribution of Bowen's was to show the importance of the expansive property and the shadow lemma (an approximate orbit determines an orbit) for deriving the geometric properties of hyperbolic non-wandering sets [24].

Two of Bowen's last papers applied his dynamical technique to Fuchsian and Kleinian groups and are contained in this volume ([45], [46]).

Rufus was special, and I could close with Mike Shub's comment "Don't forget to say that we all liked him".

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Bures-sur-Yvette, le 23 mars 1979.

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