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*The hypercyclicity problem*

We will discuss the recent solution to the hypercyclicity problem, with some new developments.

An operator  $T$  on a Banach space  $X$  is *hypercyclic* if there is a vector  $x$  whose translates  $T^n x$  are dense. For the translates thus to take a walk through the whole space is regarded as chaotic behaviour, so this definition is related to the general area of mathematical chaos. There is a well known sufficient condition for  $T$  to be hypercyclic, known as the hypercyclicity criterion.

The hypercyclicity problem is the long standing problem of whether the hypercyclicity criterion is also necessary—in fact, it is not, not even on the Hilbert space.