

## Structure of the set of hypercyclic functions for some classical hypercyclic operators

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The first two examples of *hypercyclic* operators were given in the space  $\mathcal{H}(\mathbb{C})$  of entire functions endowed with the compact topology. In 1929, Birkhoff saw that the translation operator is hypercyclic on  $\mathcal{H}(\mathbb{C})$ . Later, MacLane proved that the derivative operator is also hypercyclic. In both cases, the authors provide the construction of a hypercyclic function. The Baire Category Theorem provides a  $G_\delta$  dense set of hypercyclic vectors for both of them. Besides, they also share a common dense manifold of hypercyclic vectors. In this talk we will show that no power of any entire function is hypercyclic for Birkhoff's translation operator on  $\mathcal{H}(\mathbb{C})$ . On the other hand, we see that the set of functions whose powers are all hypercyclic for MacLane's differentiation operator is a  $G_\delta$ -dense subset of  $\mathcal{H}(\mathbb{C})$ . Related results on the linear structure of certain subsets of entire functions will also be presented.