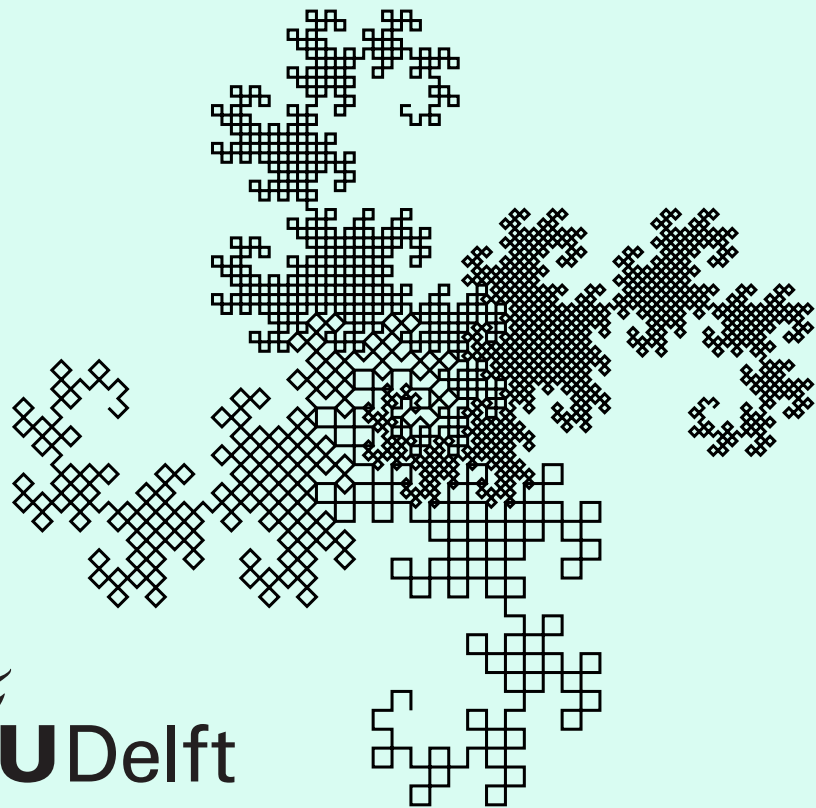


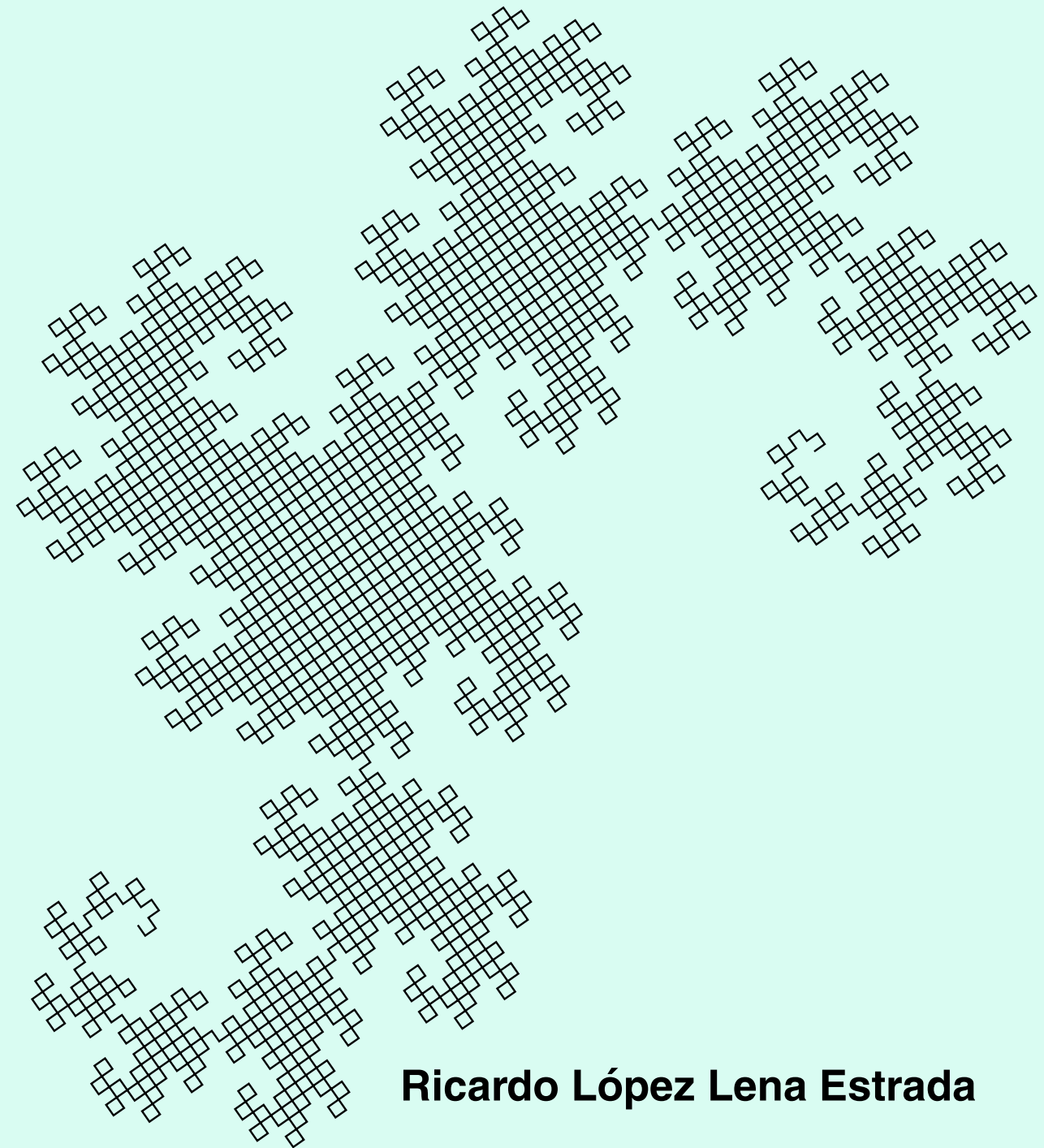
**A geometric approach to nonlinear
dissipative balanced reduction:**
Continuous and sampled-time

Model reduction for nonlinear control systems is a problem of current research with practical relevance. This work deals with a theoretical framework for structure-preserving model reduction for nonlinear dissipative control systems using a differential-geometric approach. In this work is asserted that the nonlinear balanced reduction problem for dissipative systems is isomorphic to the problem of an isometric transformation between two Hilbert manifolds, where the Gramians are components of two Riemannian metrics and duality suffices for a balanced realization. Furthermore, the decomposition of isometric operators provided here is a nonlinear generalization to Principal Component Analysis (NL-PCA).



Ricardo López Lena Estrada

A geometric approach to nonlinear dissipative balanced reduction



Ricardo López Lena Estrada

**A geometric approach to
nonlinear dissipative balanced reduction:**
Continuous and sampled-time