Arbitrary order sliding mode based differentiator

When dealing with control engineering problems a common task often is to differentiate in real time. For this purpose a discrete-time algorithm, which is based on the Uniform Robust Exact Differentiator, was designed.

- Discretization via pseudo-linear representation of the continuous-time differentiator and semi-implicit eigenvalue mapping
- Stability proof via a quadratic Lyapunov function
- Discretization scheme preserves uniform convergence property
- Algorithm and stability proof are adaptable for observer and controller design of LTI-systems