

Highlights

- We add long term memory to the Grunwald differintegral by averaging the history.
- Time can most successfully be binned exponentially, with longer bins toward the past.
- The algorithm scales as the number of bins in memory per time step during run time.
- There is a 1.5 to 2.5 decade gain in bandwidth for 20 bins over IIR algorithms.
- We find a 5 decade constant-phase bandwidth, suitable for nonlinear control in a mcu.