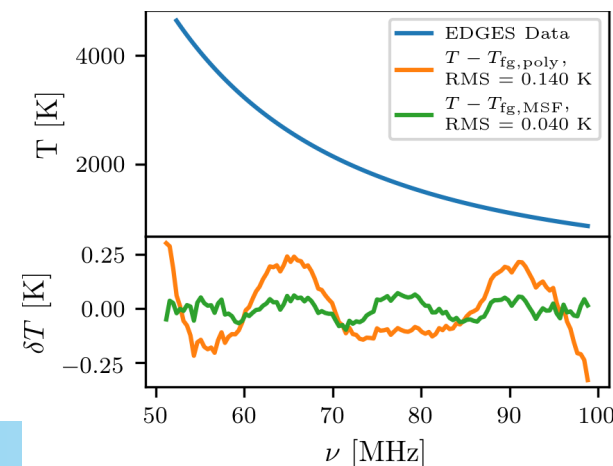
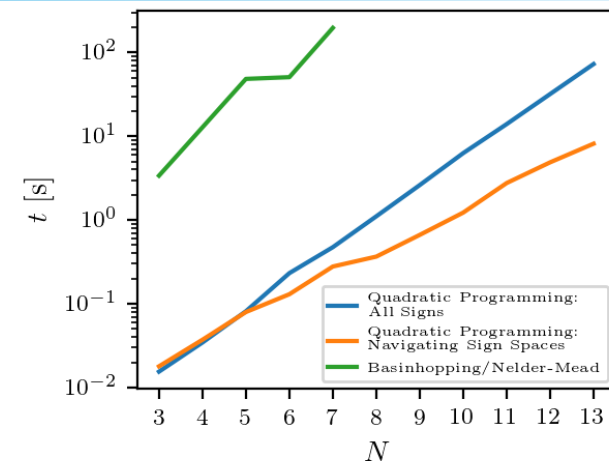


Bevins, Handley, Fialkov, de Lera Acedo, Greenhill, Price (2020)

- `maxsmooth` is a fast and robust algorithm for fitting Maximally Smooth Functions (MSFs) and related functions.
- Github: <https://github.com/htjb/maxsmooth>
- MSFs are constrained to have derivatives of order 2 or greater constrained such that,

$$\frac{d^m y}{dx^m} \geq 0 \quad \text{or} \quad \frac{d^m y}{dx^m} \leq 0$$

- The details of the algorithm can be found in the paper: <https://arxiv.org/abs/2007.14970>
- 2 Orders of magnitude faster than historically used algorithms
- Designed for use in Global 21-cm cosmology



Applications in Science At Low Frequencies

`maxsmooth` can be applied to any field where signals of interest are hidden in smooth continuum emission such as:

- **Global 21-cm cosmology:** Modelling foregrounds with smooth MSFs can lead to a better identification of signal structure and systematics. (*Tried and tested*)
- **Exoplanet Transit Detection:** Modelling the continuum emission of a planets star with MSFs may lead to an increased sensitivity to small amplitude transits. (*Not tested yet...*)
- **Spectral Line Identification:** Similarly MSFs may help identify low amplitude spectral lines in continuum emission. (*Not tested yet...*)
- **Many more fields...?**

