Is This Data Right?
Processed Data

DNA Melting Curve

- Measured
- Model

Derivative of DNA Melting Curve

- Measured
- Model
Analysis

• Filter
  – Median filter to remove impulse noise
    • Replace each sample with the median of it and its neighbors
    • Matlab hint: help medfilt1
  – FIR low-pass filter (averaging) to remove random noise
    • 60 Hz comes through vigorously in the derivative
    • Working on 60 Hz filter in VI
    • Matlab hint: help conv
      – Be careful at the edges – conv sets initial conditions to zero
    • Filter design: help fir1

• Transform
  – Range of $V_f$
    • Assumption?
  – Convert $V_{RTD}$ to temperature

• Take finite difference (derivative)
  – $\Delta F/\Delta T$
  – Is your data a function?
    • Matlab hint: help diff

• Fit to model
  • Matlab hint: help lsqcurevefit

• Compute melting temperature
  – Different methods?
    • $f=0.5$
    • Maximum $df/dt$
    • From fit
Lab Stuff

• Default salt concentration of samples is 100mM

• Dispose of DNA properly

• Please do not drink the DNA
  – Limited supply – going astonishingly fast

• The glass cuvettes are expensive – be careful

• Clean cuvette with DI water
  – It’s okay if the glass cuvette has a few droplets of water in it when you change samples