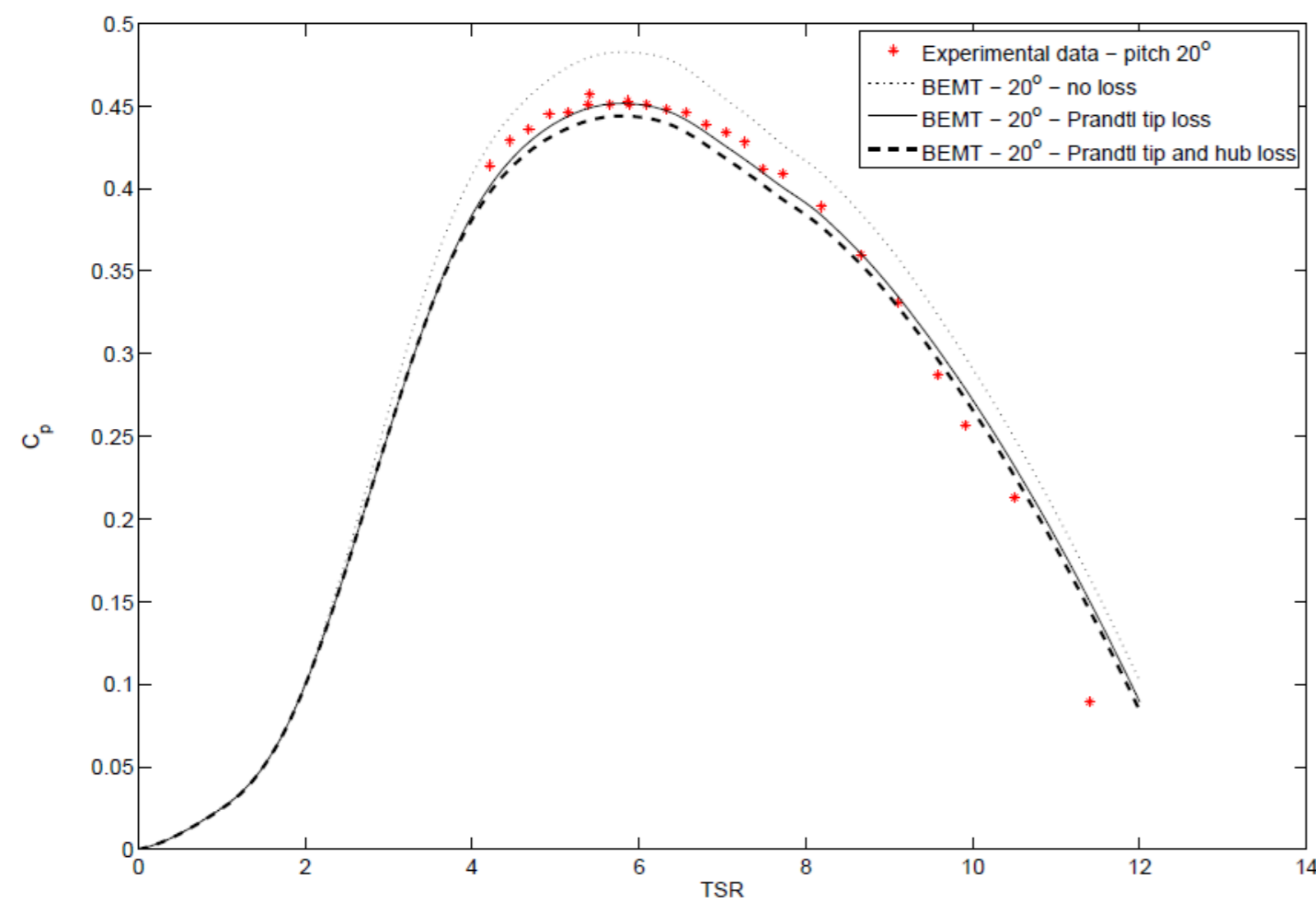


Marine turbulence and tip losses in BEMT

M Togneri, I Masters

Effects of realistic tidal flows on tidal stream turbines

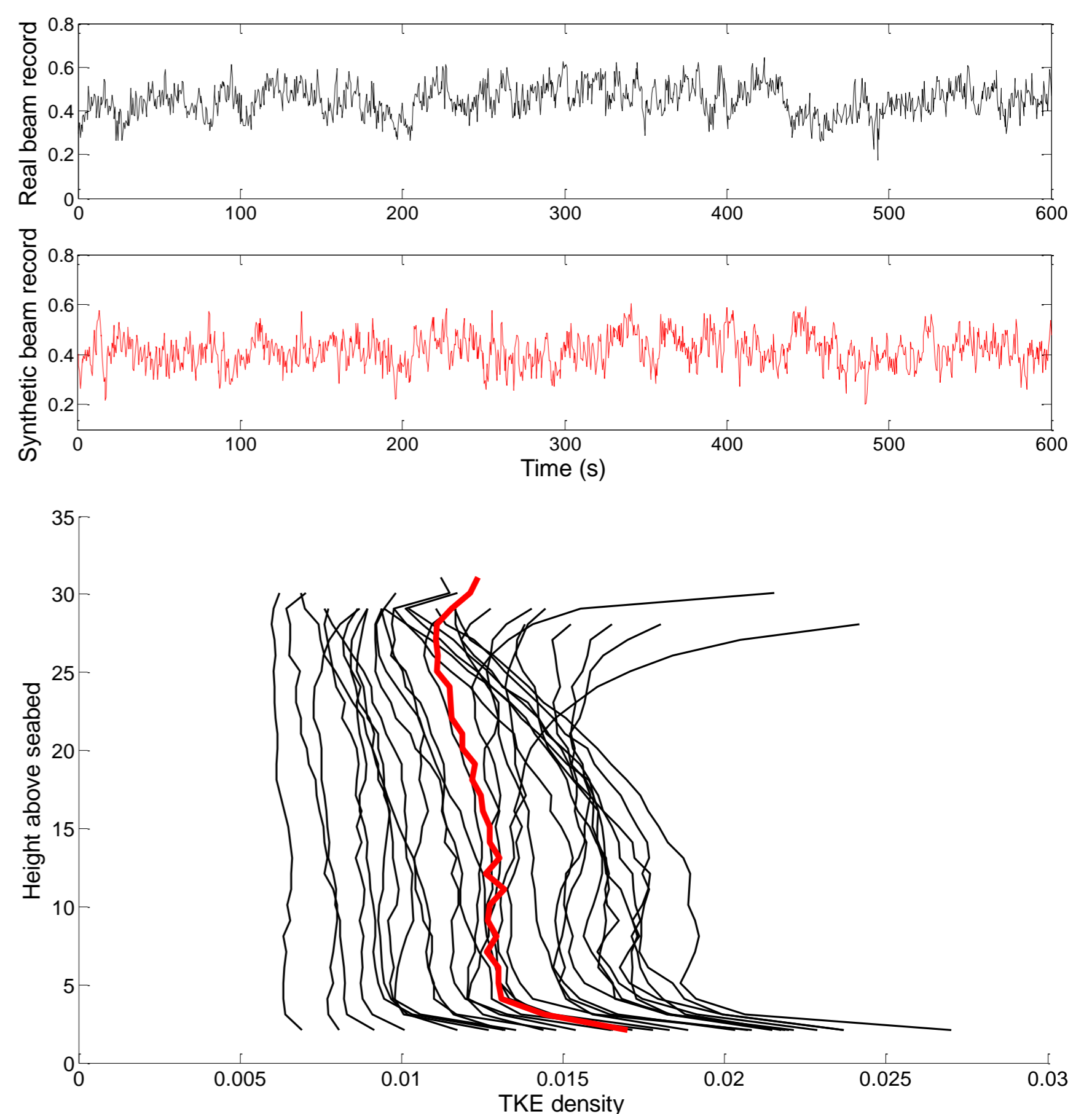


Tip losses

- Applying tip losses to mass flux as well as momentum change improves model predictions

Synthetic turbulence

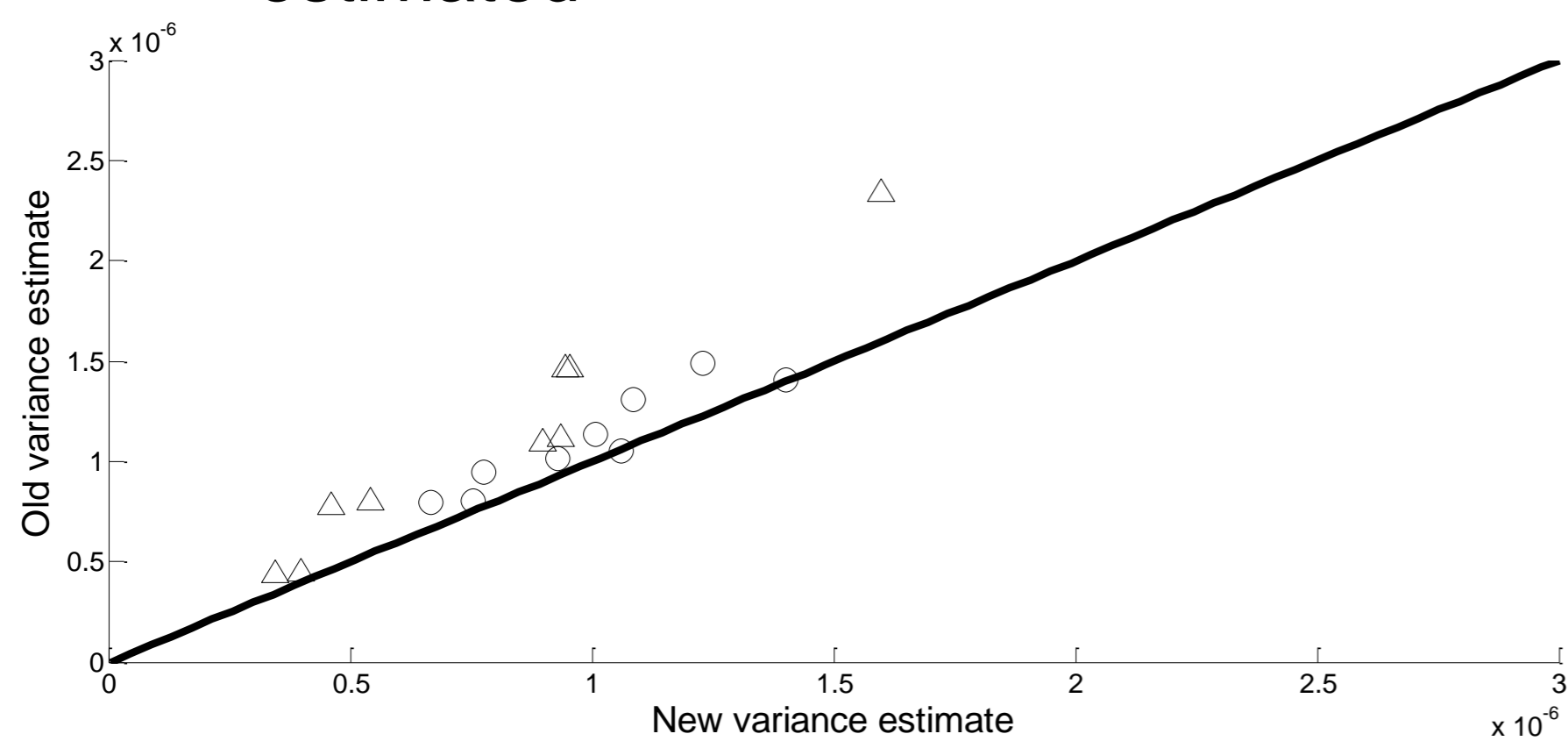
- Spectral analysis of real ADCP data allows creation of a suitable synthetic flowfield
- Analysis of several real spectra yields statistics for each frequency, allowing generation of an artificial spectrum
- Properties of synthetic data (in red) reflect real data (in black) fairly well



Turbulence measurements

- Current phase of turbulence analysis concluded
- Reynolds stress variance found to be less than thought in previous investigations i.e., ADCPs are more accurate than thought.

– This is largely due to direct calculation of single-beam variance turning out to be lower than previous techniques had estimated



- Estimates of ϵ (red, from structure functions) and P (black, from variance method) show poor agreement

