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PhD week 22-Weekly summary

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Problems this week:

- VAE
- PCE strengths (uncertainties quantification)
- PCA-PCE modelling error
- Still looking ICfep model and writing ESA

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PCE strengths

What is the difference on measures of accuracy between ML algorithm and PCE? Why separate PCE as a uncertainty quantification technique rather than ML?

- Is that just because ML based on mean absolute error (MAE)? PCE is based on KL divergence (statistic outputs on PDF)?
- PCE is also making pointwise prediction. What is the meaning to get the mean and variance of PCE output?

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PCE strengths

- Require less parameter tuning
- Not only accurate pointwise prediction of ouput, but also statistics thereof in the presence of input uncertainties (???)
- Easy to interpret for the analytical expression
- Robust to noise
- Needs realteively few data points to attain acceptable performance

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PCA-PCE error

- First, look at the modelling error on beam problem code

- Second, look at the modelling error on the Meles's code

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ESA