This workshop was made by Abhishek Tejrao Sose from Virginia Tech based on the examples added to the PEUQSE repository by A. Savara

Here is the link to google colab for installation: <https://colab.research.google.com/drive/19d-xhcu3I2hQMYY_6Yfoj_KZDPY_QeSm?usp=sharing>

**Table 1.** A description of the features (lessons to be learned) and examples of PEUQSE

| **Sr. No** | **Features (Aim to learn)** | **Examples** |
| --- | --- | --- |
| 0 | Introduction | PPT, Word doc - point to google colab file |
| 1 | BPE vs CPE | BPE: 00f5 (doOptimizeLogP)  CPE: 00f6 (doOptimizeSSR) |
| 2 | Introduce MAP, muAP, HPD | 00a0 (MH) OR 00a2 (ESS) |
| 3 | Different sampling algorithms   * (Strategy and development of intuition to use different samplers) * (> 3 parameters - Use uniform or astriodal sampling; 2-3 parameters - Custom grid search) | Grid search (00f2, 00f3) |
| Uniform/Sobol sampling:   1. Uniform (00f4) 2. Sobol (00f8) 3. Astroidal (00f9) 4. Shell (00f10) |
| Metropolis Hastings (00a0) |
| ESS (00a2) |
| EJS (00a1) |
| 4 | Multistart MCMC | 1. 00c9 (MH MCMC run) |
| 1. 00c10 (ESS MCMC run) |
| 1. 00c11 (EJS MCMC run) |
| 5 | Explain convergence metrics | Example 7a |
| 6 | Stuck walkers - restart at MAP & Walkers allowed to pick a mode | Example28/runfile\_316\_EJS and runfile\_316\_EJSresampled |
| 7 | Custom log likelihood | 7d, 7e |
| 8 | Graph plotting | Mumpce\_custom\_plotting\_example.py  Example 00 explanation - (Filtering low probability points and excluding from histograms) |
| 9 | Treat NaNs as zero probability (PEUQSE doesn’t crash) | Example 7n |