

Using LBN-MOBO in the Presence of Noise

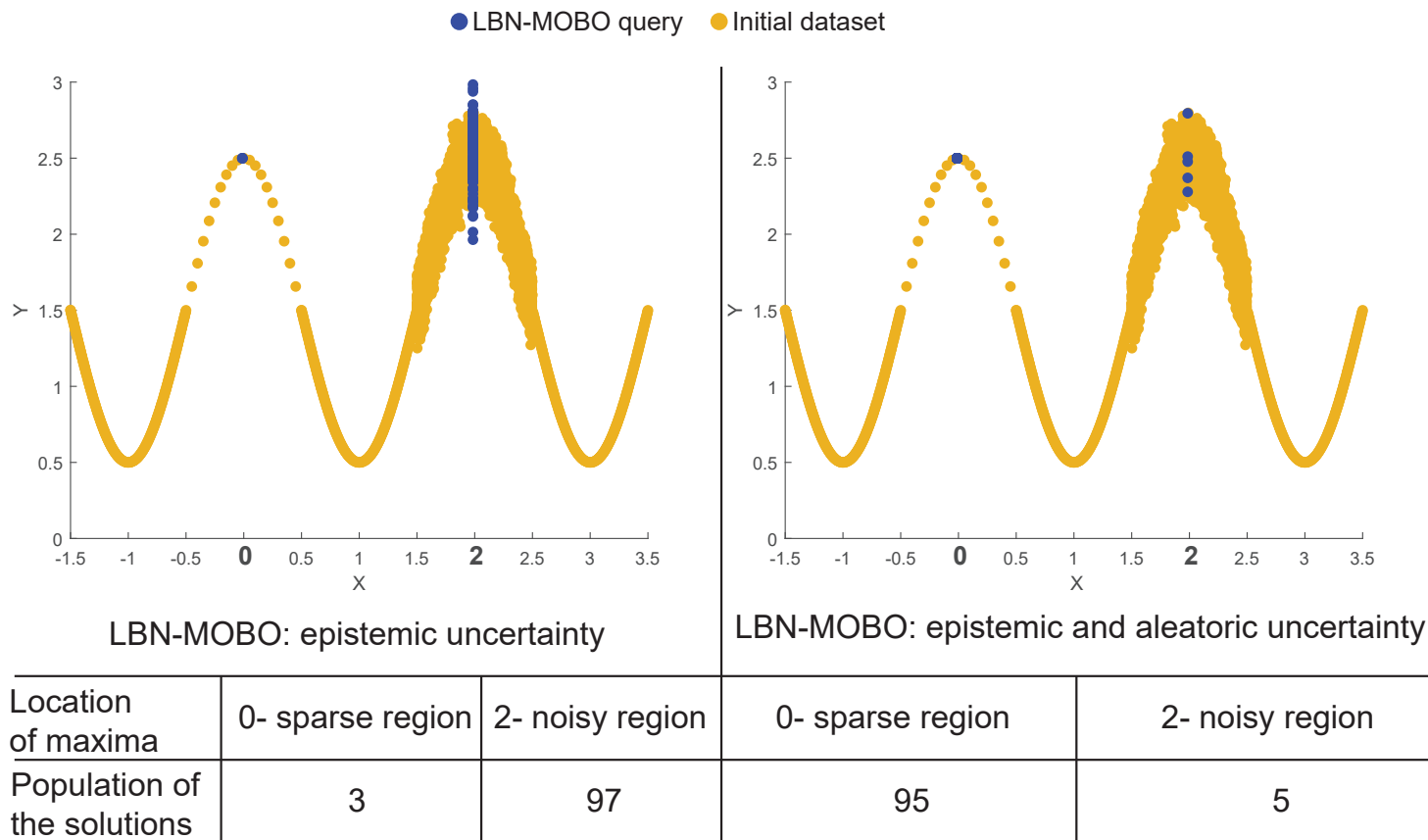


Figure 1: The figure shows two local maxima; one is locally noisy because of the underlying Native Forward Processes (NFP) and one is locally sparse due to unbalanced sampling. More samples don’t reduce noise induced aleatoric uncertainty, as the it is intrinsic to the faulty NFP. However, focusing on the other maxima with epistemic uncertainty, can find us a better solution after some iterations. Our findings, illustrated in this figure, reveal that relying solely on epistemic uncertainty can lead to convergence on the noisy maxima, likely because noise also induces some epistemic uncertainty in the Deep Ensembles approach. By increasing epistemic uncertainty and reducing aleatoric uncertainty during the acquisition, most samples are drawn to epistemic area (spars region) and avoiding the noisy regions.