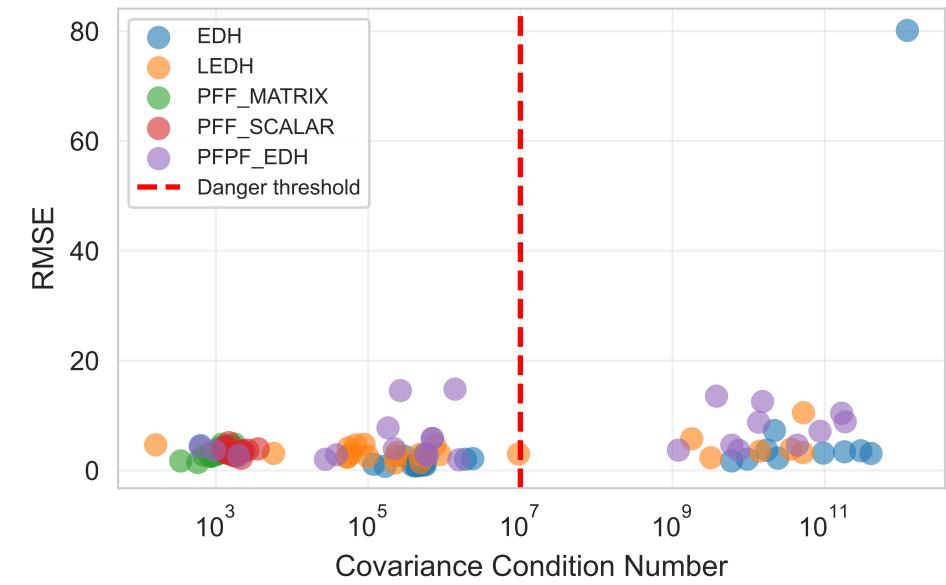
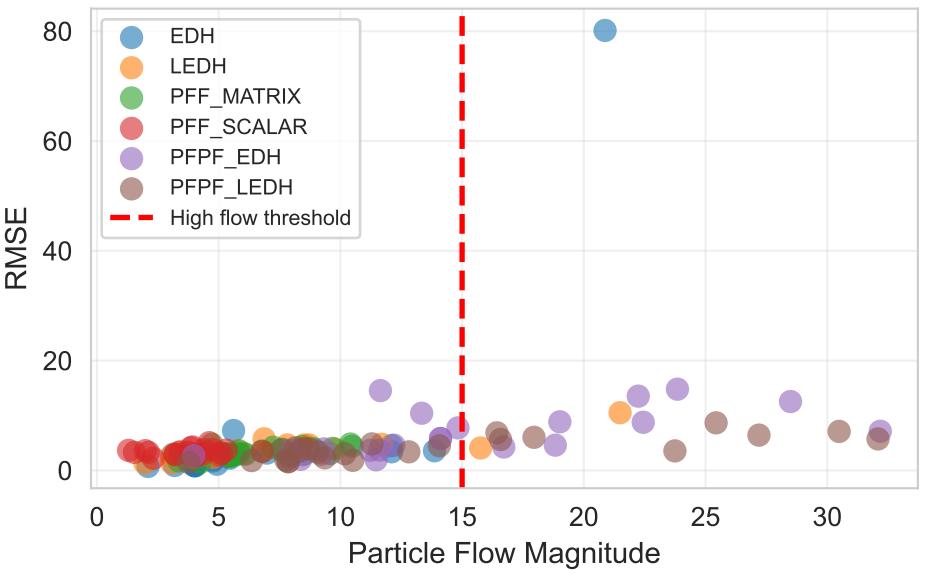


# Failure Mode Analysis: WHY Do Filters Fail?

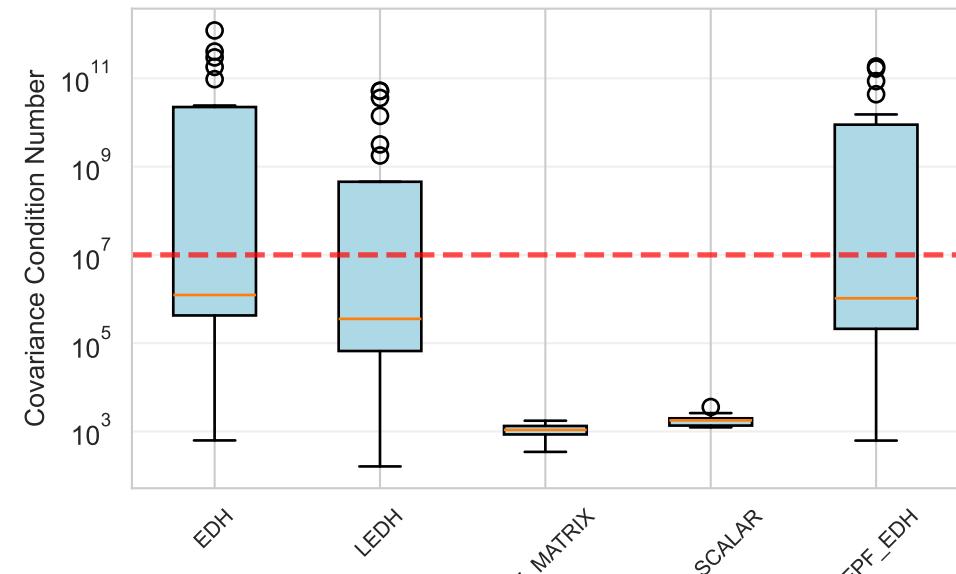
**Failure Mode: Covariance III-Conditioning**



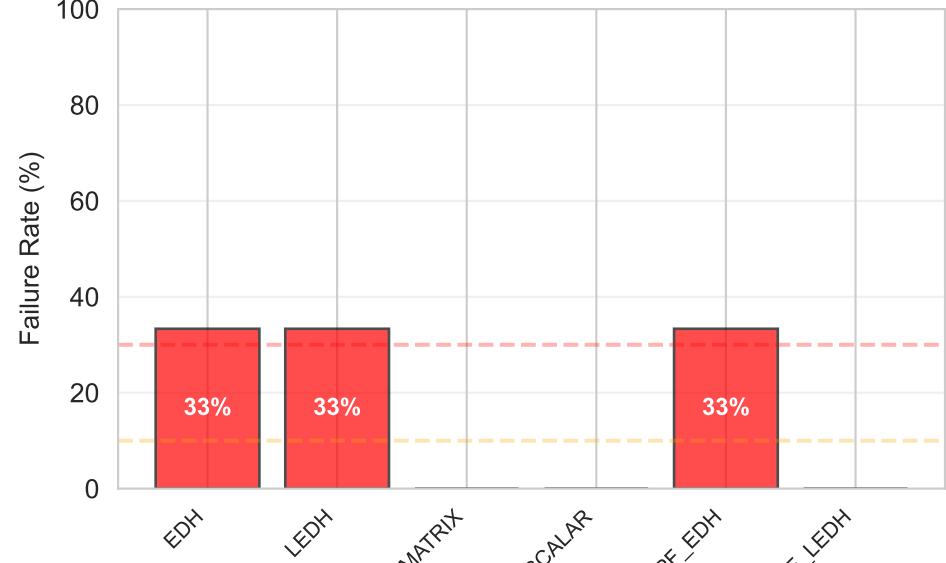
**Failure Mode: Excessive Particle Flow**



**Covariance Stability by Filter**



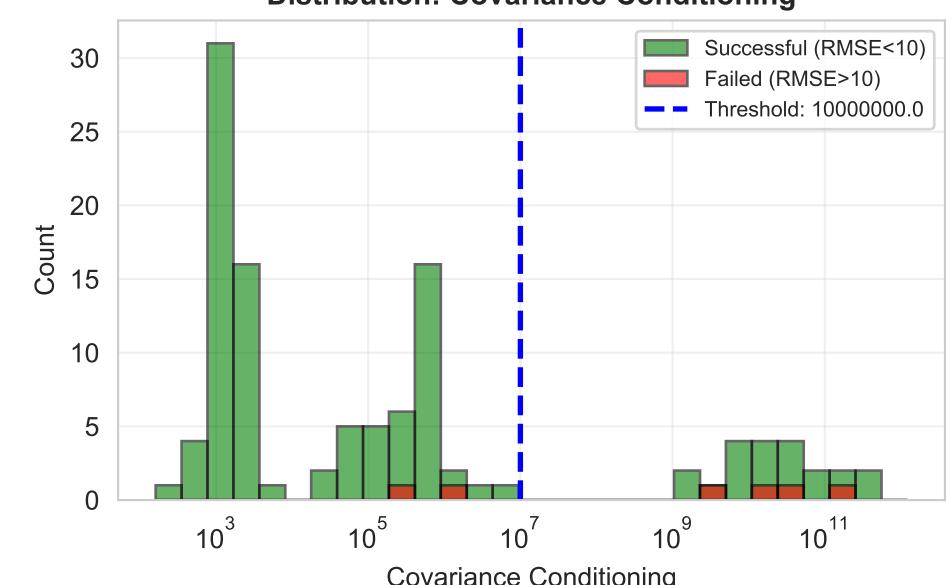
**Failure Rate: Nonlinearity**



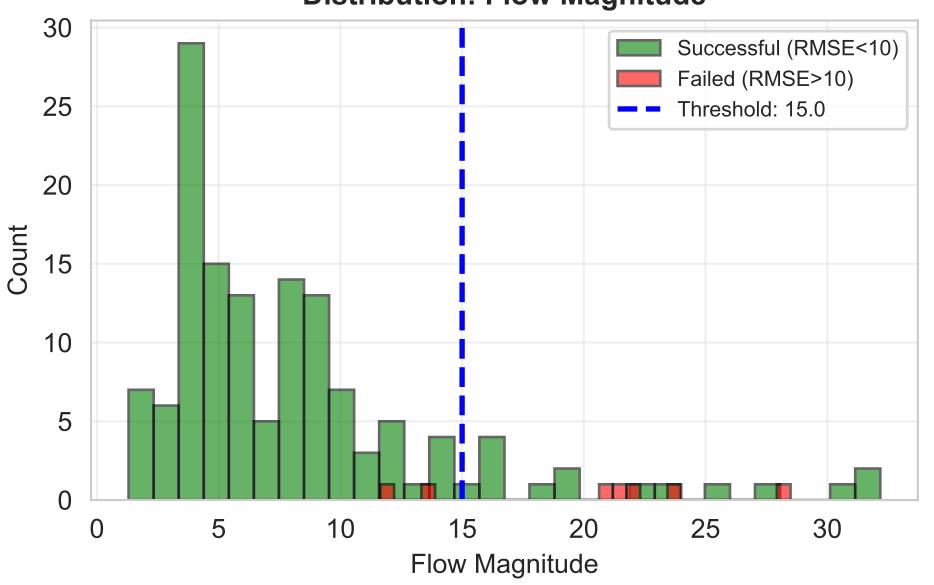
**Failure Rate: Conditioning**



**Distribution: Covariance Conditioning**



**Distribution: Flow Magnitude**



**Distribution: ESS Minimum**

