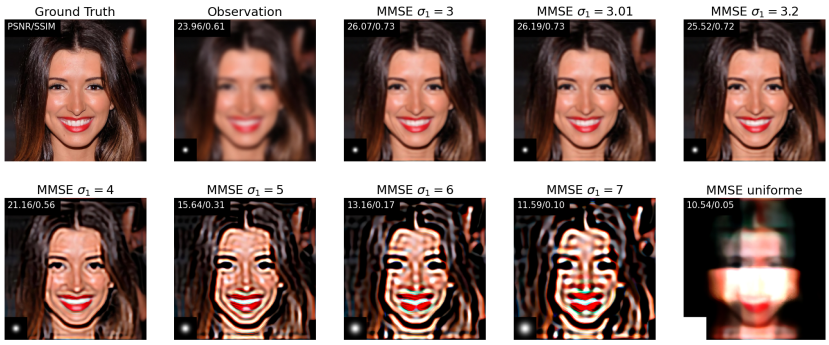

Figure 1: Illustration of the PnP-ULA stability to a mismatch forward model. MMSE estimators computed with PnP-ULA run on $30,000$ steps on Gaussian blur of standard deviation σ_1. Note that the image reconstruction quality improves as σ_1 gets closer to $\sigma^\star = 3$, used to degrade the image.

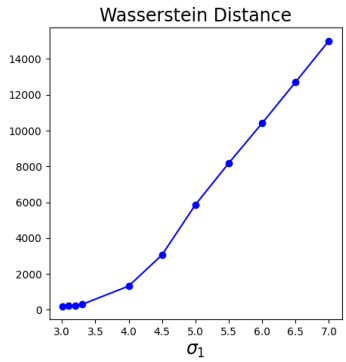

Figure 2: Evolution of the Wasserstein distance between sampling distributions computed with a mismatched blur kernel, $\sigma_1 \in [3, 7[$ and sampling with the exact forward model $\sigma^\star = 3$. Note that the image reconstruction quality improves as σ_1 gets closer to $\sigma^\star = 3$, used to degrade the image.

1 Forward model mismatch for $\sigma_1 > 3$

In the exact same setting that the experiment present in the paper. In the case of forward model mismatch, Figure 1 present the qualitative result for $\sigma_1 > 3$. $\sigma_1 = +\infty$ correspond to an uniform kernel of blur. One can observed artefacts which looks like aliasing on the reconstructed images. This was predictable because the method try to remove "more" blur than the "quantity of blur" of the image. Thus artificial high variation area are generated.

Figure 2 present the Wasserstein distance between the sample, we observed an almost linear behavior. This observation support Theorem 1.

2 Anisotropic blur

In these experiments we study a degradation with an anisotropic kernel of blur. It is a Gaussian blur with an eigenvalue of 3 (vertically) and an eigenvalue of 5 (horizontally). In figure 3 we present the different reconstructions of PnP-ULA, with the exact degradation (named anisotropic) and symmetric Gaussian kernel with different standard deviation (eigenvalues) $\sigma_1 \in [2, 6]$. In figure 4 we present the Wasserstein distance between the sampling of reference (with the anisotropic kernel of degradation) and samplings generated with an isotropic kernel of blur of eigenvalues σ_1.

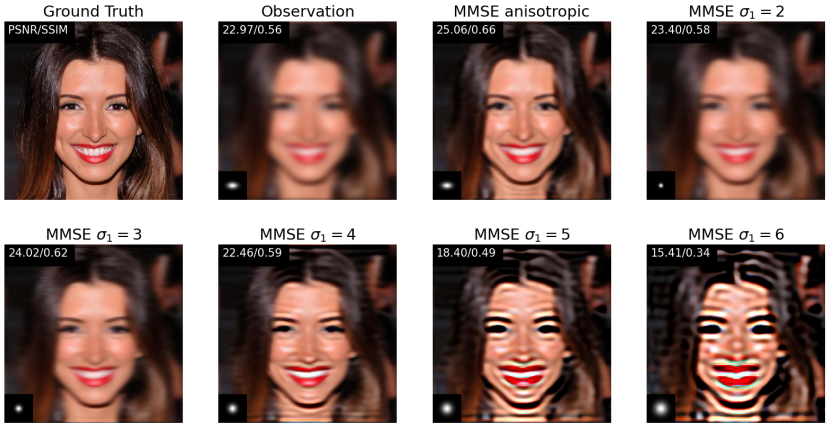

Figure 3: Illustration of the PnP-ULA stability to a mismatch forward model with anisotropic Gaussian degradation. MMSE estimators computed with PnP-ULA run on $30,000$ steps.

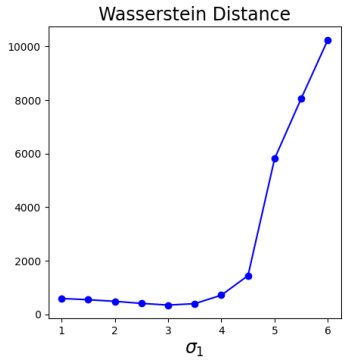

Figure 4: Evolution of the Wasserstein distance between sampling distributions computed with a mismatched isotropic blur kernel, stadard deviation $\sigma_1 \in [2, 6]$ and sampling with the exact forward model, an anisotropic kernel of blur (vertical standard deviation of 3 and horizontal standard deviation of 5).

We observed a predictable behavior, the "ringing" effect start on the vertical direction first at $\sigma_1 = 4$ (because the forward model is "too strong" in that direction and "too weak" in the other direction). Then for $\sigma_1 > 5$, the aliasing effect is visible in both directions.