

# PASTIS Dataset (Wavelet) - 2024-10-24

## Dataset Description

- **Original source:** [Add source information here]
- **Sizes:** [Add size information here]
- **Image Type:** Gray
- **Date range covered:** [Add date range here]
- **Number of Images (and channels):** [Add number of images here]
- **Representation:** Wavelet

## Why did we choose it?

[Add reasons for choosing this dataset]

## Cleaning - what did we do?

[Add cleaning process details]

## Hypotheses

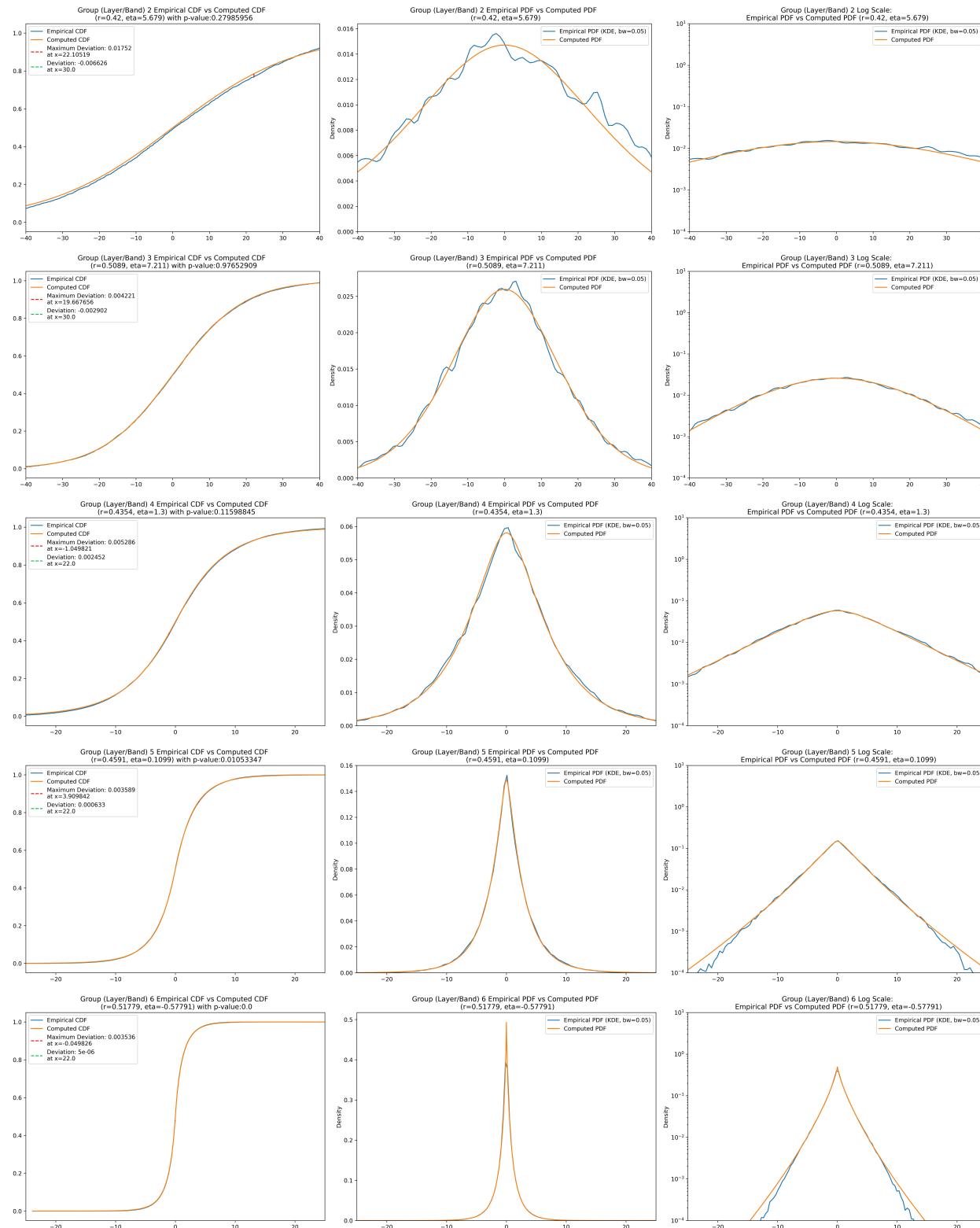
[Add hypotheses, basis/representation used, and assumptions about signal subsets]

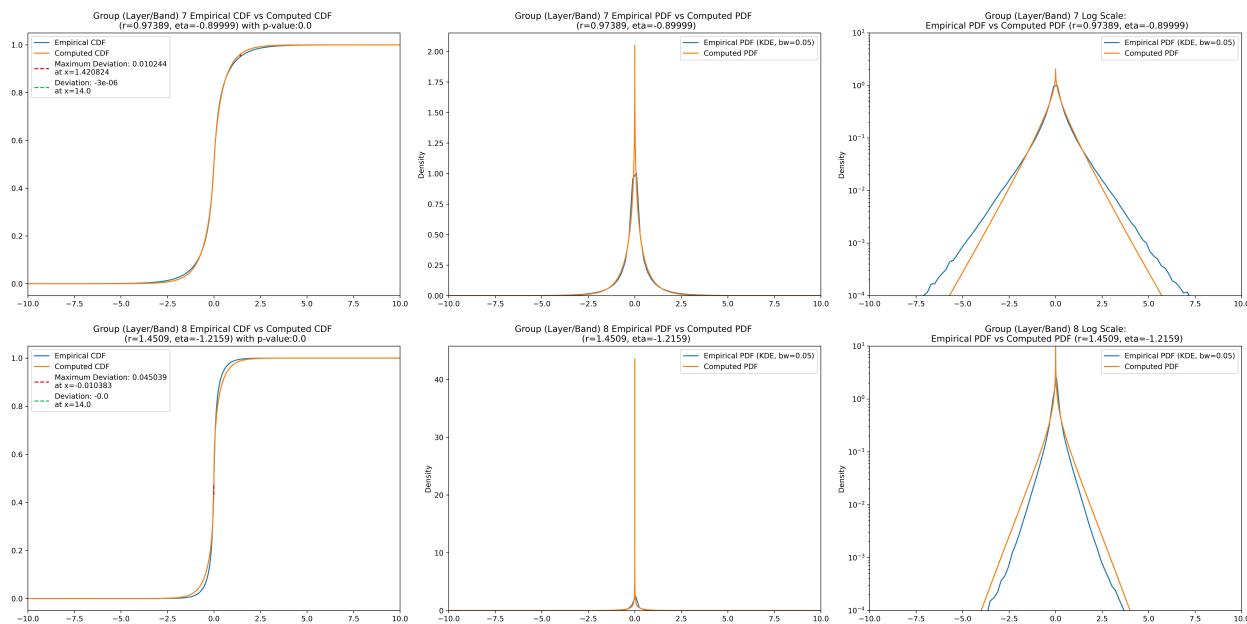
## Tests and Questions

### Full Grid Search Combo Plots



## Compare CDF PDF Plots





## Results

Best parameters from the proposed prior distribution:

layer	total_samples	best_r	best_eta	kstest_stat_best	kstest_stat_cutoff_0.05	n_pval_0.05
2	3180	0.42	5.679	0.0175199	0.0240303	6034
3	12720	0.5089	7.211	0.00422109	0.0120285	108666
4	50880	0.4354	1.3	0.0052863	0.00601756	64395
5	203520	0.4591	0.1099	0.00359071	0.0030096	144888
6	814080	0.51779	-0.57791	0.00353606	0.00150501	152640
7	3.25632e+06	0.97389	-0.89999	0.0102435	0.000752555	18109
8	1.30253e+07	1.4509	-1.2159	0.0450394	0.00037629	894

Optimization progression:

layer	initial_r	initial_eta	best_r	best_eta	iter1_r	iter1_eta	kstest_stat_iter1	iter2_r	iter2_eta	kstest_stat_iter2	iter3_r	iter3_eta	kste
2	0.42	5.7	0.42	5.679	0.42	5.68	0.0175418	0.42	5.679	0.0175199	nan	nan	nan
3	0.51	7.3	0.5089	7.211	0.509	7.22	0.00426326	0.5089	7.211	0.00422109	nan	nan	nan
4	0.44	1.4	0.4354	1.3	0.436	1.31	0.00531523	0.4354	1.3	0.0052863	nan	nan	nan
5	0.47	0.2	0.4591	0.1099	0.46	0.12	0.0038628	0.4591	0.11	0.00359489	0.4591	0.1099	0.1099
6	0.51	-0.6	0.51779	-0.57791	0.517	-0.58	0.00358781	0.5178	-0.578	0.00354071	0.51779	-0.57791	0.57791
7	0.97	-0.9	0.97389	-0.89999	0.974	-0.9	0.0102497	0.9739	-0.9	0.0102448	0.97389	-0.89999	0.89999
8	1.44	-1.2	1.4509	-1.2159	1.45	-1.22	0.0468199	1.4509	-1.216	0.0450822	1.4509	-1.2159	0.89999

Parameter comparisons with other common priors (Gaussian, Laplace, Student t):

layer	kstest_stat_cutoff_0.05
2	0.0240303
3	0.0120285
4	0.00601756
5	0.0030096
6	0.00150501
7	0.000752555
8	0.00037629

All the columns you can access:

```
['obs_var', 'var_lower', 'var_upper', 'obs_kurt', 'kurt_lower', 'kurt_upper', 'total_samples', 'initial_r', 'initial_eta', 'kstest_stat_initial', 'kstest_stat_cutoff_0.05', 'kstest_stat_eta0', 'best_r_eta0', 'best_r', 'best_eta', 'kstest_stat_best', 'iter1_r', 'iter1_eta', 'kstest_stat_iter1', 'iter2_r', 'iter2_eta', 'kstest_stat_iter2', 'iter3_r', 'iter3_eta', 'kstest_stat_iter3', 'n_pval_0.05', 'param_gaussian', 'kstest_stat_gaussian', 'kstest_pval_gaussian', 'param_laplace', 'kstest_stat_laplace', 'kstest_pval_laplace', 'param_t', 'kstest_stat_t', 'kstest_pval_t', 'kstest_pval_gengamma', 'kstest_ratio_gengamma_tail0', 'kstest_ratio_gengamma_tail10', 'kstest_ratio_gaussian_tail0', 'kstest_ratio_gaussian_tail10', 'kstest_ratio_laplace_tail0', 'kstest_ratio_laplace_tail10', 'kstest_ratio_t_tail0', 'kstest_ratio_t_tail10', 'kstest_stat_gengamma_tail2', 'kstest_stat_gengamma_tail10']
```

## Major Take-aways

[Add major conclusions and insights]