

A. Probe Parameter Sensitivity Analysis

To validate the robustness of S_{st} to probe graph design, we vary key CSBM parameters on the SM setting. Table 1 shows that AVG and STD remain highly stable across all variations (within 1.0 point), and the Kendall’s τ ranking correlation consistently exceeds 0.80, confirming that the relative structural ordering of clients is robust to probe design. We further note that S_{st} reflects the GNN’s learned representation geometry rather than the probe’s specific topology; as long as the probe provides sufficient structural diversity for the GNN to express its preferences, the resulting rankings remain consistent.

Table 1. Probe parameter sensitivity (SM setting).

Param	Values				Kendall’s τ
Homophily	0.65	0.75	0.85	–	0.82 ± 0.07
<i>AVG/STD</i>	81.78/10.71	82.37/10.32	82.49/10.44	–	–
Node count	10	20	40	–	0.87 ± 0.08
<i>AVG/STD</i>	81.46/10.84	82.37/10.32	82.31/10.19	–	–
Avg degree	2	3	4	5	0.89 ± 0.07
<i>AVG/STD</i>	81.87/10.63	82.37/10.32	82.68/10.31	81.93/10.58	–
Feature dim	64	128	256	512	0.91 ± 0.06
<i>AVG/STD</i>	81.94/10.56	82.37/10.32	82.63/10.44	82.18/10.47	–

Default in **bold**. τ = mean pairwise ranking correlation.