Table 1: Graph generation performance on the synthetic datasets: Planar, Tree and SBM. We present the results from five sampling runs, each generating 40 graphs, reported as the mean ± standard deviation. Full version in Tab. 7.

Model	Class	Planar		Tree		SBM	
		V.U.N. ↑	Ratio ↓	V.U.N. ↑	Ratio ↓	V.U.N. ↑	Ratio ↓
Train set	—	100	1.0	100	1.0	85.9	1.0
GraphRNN (You et al., 2018)	Autoregressive	0.0	490.2	0.0	607.0	5.0	14.7
GRAN (Liao et al., 2019)	Autoregressive	0.0	2.0	0.0	607.0	25.0	9.7
SPECTRE (Martinkus et al., 2022)	GAN	25.0	3.0	—	—	52.5	2.2
DiGress (Vignac et al., 2022)	Diffusion	77.5	5.1	90.0	**1.6**	60.0	1.7
EDGE (Chen et al., 2023)	Diffusion	0.0	431.4	0.0	850.7	0.0	51.4
BwR (EDP-GNN) (Diamant et al., 2023)	Diffusion	0.0	251.9	0.0	11.4	7.5	38.6
BiGG (Dai et al., 2020)	Autoregressive	5.0	16.0	75.0	5.2	10.0	11.9
GraphGen (Goyal et al., 2020)	Autoregressive	7.5	210.3	95.0	33.2	5.0	48.8
HSpectre (Bergmeister et al., 2023)	Diffusion	95.0	2.1	**100.0**	4.0	75.0	10.5
GruM (Jo et al., 2024)	Diffusion	90.0	1.8	—	—	85.0	**1.1**
CatFlow (Eijkelboom et al., 2024)	Flow	80.0	—	—	—	85.0	—
DisCo (Xu et al., 2024)	Diffusion	83.6±2.1	—	—	—	66.2±1.4	—
Cometh (Siraudin et al., 2024)	Diffusion	**99.5**±0.9	—	—	—	75.0±3.7	—
DeFoG (5% steps)	Flow	95.0±3.2	3.2±1.1	73.5±9.0	2.5±1.0	86.5±5.3	2.2±0.3
DeFoG	Flow	**99.5**±1.0	**1.6**±0.4	96.5±2.6	**1.6**±0.4	**90.0**±5.1	4.9±1.3