

Resultados da Execução do GA

($N_{\text{pop}} = 100$, $k = 50$) em Grafos Tipo **Galaxy** ($a \leq 25$, todos v)

(5 Repetições)

Instância (a, b, c, v)	Parâmetros (N × M)	Média de Cores ($\text{bar}\chi_h$)	Erro Padrão (SE χ)	Tempo Médio (s)	Erro Padrão (SE t)
a1_b10_c20_v1	19 × 18	19.00	0.00	0.02	0.00
a1_b10_c20_v2	15 × 14	15.00	0.00	0.02	0.00
a1_b10_c20_v3	11 × 10	11.00	0.00	0.02	0.00
a1_b10_c20_v4	14 × 13	14.00	0.00	0.02	0.00
a1_b10_c20_v5	15 × 14	15.00	0.00	0.02	0.00
a1_b10_c30_v1	16 × 15	16.00	0.00	0.02	0.00
a1_b10_c30_v2	13 × 12	13.00	0.00	0.02	0.00
a1_b10_c30_v3	27 × 26	27.00	0.00	0.02	0.00
a1_b10_c30_v4	20 × 19	20.00	0.00	0.02	0.00
a1_b10_c30_v5	21 × 20	21.00	0.00	0.02	0.00
a1_b10_c40_v1	33 × 32	33.00	0.00	0.03	0.00
a1_b10_c40_v2	18 × 17	18.00	0.00	0.02	0.00
a1_b10_c40_v3	34 × 33	34.00	0.00	0.03	0.00
a1_b10_c40_v4	23 × 22	23.00	0.00	0.02	0.00
a1_b10_c40_v5	32 × 31	32.00	0.00	0.03	0.00
a1_b10_c50_v1	12 × 11	12.00	0.00	0.02	0.00
a1_b10_c50_v2	11 × 10	11.00	0.00	0.01	0.00
a1_b10_c50_v3	29 × 28	29.00	0.00	0.03	0.00
a1_b10_c50_v4	37 × 36	37.00	0.00	0.03	0.00
a1_b10_c50_v5	31 × 30	31.00	0.00	0.03	0.00
a1_b10_c60_v1	15 × 14	15.00	0.00	0.02	0.00
a1_b10_c60_v2	40 × 39	40.00	0.00	0.03	0.00
a1_b10_c60_v3	18 × 17	18.00	0.00	0.02	0.00
a1_b10_c60_v4	18 × 17	18.00	0.00	0.02	0.00
a1_b10_c60_v5	55 × 54	55.00	0.00	0.06	0.00
a1_b10_c70_v1	33 × 32	33.00	0.00	0.03	0.00
a1_b10_c70_v2	19 × 18	19.00	0.00	0.03	0.00
a1_b10_c70_v3	71 × 70	71.00	0.00	0.06	0.00
a1_b10_c70_v4	24 × 23	24.00	0.00	0.01	0.00
a1_b10_c70_v5	43 × 42	43.00	0.00	0.03	0.00
a1_b10_c80_v1	39 × 38	39.00	0.00	0.03	0.00
a1_b10_c80_v2	75 × 74	75.00	0.00	0.08	0.00
a1_b10_c80_v3	64 × 63	64.00	0.00	0.05	0.00
a1_b10_c80_v4	81 × 80	81.00	0.00	0.09	0.00
a1_b10_c80_v5	15 × 14	15.00	0.00	0.02	0.00
a1_b10_c90_v1	26 × 25	26.00	0.00	0.02	0.00
a1_b10_c90_v2	79 × 78	79.00	0.00	0.08	0.00
a1_b10_c90_v3	54 × 53	54.00	0.00	0.04	0.00
a1_b10_c90_v4	77 × 76	77.00	0.00	0.07	0.00
a1_b10_c90_v5	69 × 68	69.00	0.00	0.06	0.00

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Instância (a, b, c, v)	Parâmetros (N × M)	Média de Cores ($\text{bar}\chi_h$)	Erro Padrão (SE χ)	Tempo Médio (s)	Erro Padrão (SE t)
a1_b10_c100_v1	31 × 30	31.00	0.00	0.25	0.24
a1_b10_c100_v2	80 × 79	80.00	0.00	0.07	0.00
a1_b10_c100_v3	98 × 97	98.00	0.00	0.12	0.01
a1_b10_c100_v4	22 × 21	22.00	0.00	0.02	0.00
a1_b10_c100_v5	52 × 51	52.00	0.00	0.15	0.10
a5_b10_c20_v1	63 × 58	18.00	0.00	0.08	0.01
a5_b10_c20_v2	81 × 76	20.00	0.00	0.17	0.02
a5_b10_c20_v3	81 × 76	19.00	0.00	0.22	0.05
a5_b10_c20_v4	68 × 63	19.00	0.00	0.07	0.00
a5_b10_c20_v5	80 × 75	20.00	0.00	0.15	0.01
a5_b10_c30_v1	108 × 103	31.00	0.00	0.23	0.08
a5_b10_c30_v2	111 × 106	31.00	0.00	0.28	0.11
a5_b10_c30_v3	108 × 103	27.00	0.00	0.26	0.01
a5_b10_c30_v4	96 × 91	29.00	0.00	0.15	0.01
a5_b10_c30_v5	102 × 97	31.00	0.00	0.14	0.01
a5_b10_c40_v1	149 × 144	40.00	0.00	0.47	0.01
a5_b10_c40_v2	161 × 156	41.00	0.00	0.43	0.03
a5_b10_c40_v3	142 × 137	40.00	0.00	0.29	0.01
a5_b10_c40_v4	118 × 113	32.00	0.00	0.20	0.01
a5_b10_c40_v5	162 × 157	42.00	0.00	0.54	0.02
a5_b10_c50_v1	165 × 160	48.00	0.00	0.45	0.03
a5_b10_c50_v2	130 × 125	35.00	0.00	0.25	0.00
a5_b10_c50_v3	150 × 145	51.00	0.00	0.36	0.03
a5_b10_c50_v4	156 × 151	45.00	0.00	0.42	0.03
a5_b10_c50_v5	150 × 145	41.00	0.00	0.37	0.02
a5_b10_c60_v1	158 × 153	47.00	0.00	0.56	0.03
a5_b10_c60_v2	166 × 161	41.00	0.00	0.85	0.05
a5_b10_c60_v3	216 × 211	61.00	0.00	0.80	0.13
a5_b10_c60_v4	222 × 217	60.00	0.00	0.84	0.07
a5_b10_c60_v5	147 × 142	58.00	0.00	0.25	0.01
a5_b10_c70_v1	190 × 185	67.00	0.00	0.53	0.02
a5_b10_c70_v2	166 × 161	70.00	0.00	0.36	0.02
a5_b10_c70_v3	178 × 173	67.00	0.00	0.43	0.01
a5_b10_c70_v4	264 × 259	68.00	0.00	1.55	0.21
a5_b10_c70_v5	265 × 260	67.00	0.00	2.76	0.78
a5_b10_c80_v1	261 × 256	66.00	0.00	1.61	0.08
a5_b10_c80_v2	165 × 160	75.00	0.00	0.27	0.01
a5_b10_c80_v3	217 × 212	67.00	0.00	0.69	0.02
a5_b10_c80_v4	237 × 232	81.00	0.00	0.98	0.05
a5_b10_c80_v5	204 × 199	63.00	0.00	0.66	0.05
a5_b10_c90_v1	239 × 234	88.00	0.00	1.44	0.17
a5_b10_c90_v2	312 × 307	90.00	0.00	2.01	0.08
a5_b10_c90_v3	252 × 247	69.00	0.00	1.41	0.06
a5_b10_c90_v4	221 × 216	78.00	0.00	0.66	0.03
a5_b10_c90_v5	254 × 249	90.00	0.00	1.26	0.05
a5_b10_c100_v1	245 × 240	74.00	0.00	2.26	0.42
a5_b10_c100_v2	318 × 313	91.00	0.00	3.53	0.25

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Instância (a, b, c, v)	Parâmetros (N × M)	Média de Cores ($\text{bar}\chi_h$)	Erro Padrão (SE χ)	Tempo Médio (s)	Erro Padrão (SE t)
a5_b10_c100_v3	304 × 299	93.00	0.00	2.82	0.16
a5_b10_c100_v4	179 × 174	67.00	0.00	0.50	0.03
a5_b10_c100_v5	251 × 246	77.00	0.00	1.41	0.13
a10_b10_c20_v1	164 × 154	22.80	0.20	2.24	0.79
a10_b10_c20_v2	159 × 149	22.40	0.24	2.51	0.60
a10_b10_c20_v3	160 × 150	22.60	0.24	2.36	0.87
a10_b10_c20_v4	147 × 137	21.00	0.00	0.97	0.16
a10_b10_c20_v5	167 × 157	23.40	0.24	6.58	2.51
a10_b10_c30_v1	218 × 208	29.20	0.20	3.12	0.51
a10_b10_c30_v2	222 × 212	31.80	0.20	1.78	0.10
a10_b10_c30_v3	208 × 198	27.40	0.24	1.64	0.14
a10_b10_c30_v4	196 × 186	28.20	0.20	1.15	0.08
a10_b10_c30_v5	212 × 202	31.00	0.00	1.23	0.05
a10_b10_c40_v1	245 × 235	37.00	0.00	1.24	0.08
a10_b10_c40_v2	246 × 236	39.00	0.00	1.96	0.10
a10_b10_c40_v3	279 × 269	41.20	0.20	2.56	0.21
a10_b10_c40_v4	259 × 249	38.00	0.00	1.37	0.06
a10_b10_c40_v5	262 × 252	41.00	0.00	1.28	0.05
a10_b10_c50_v1	337 × 327	51.00	0.00	2.38	0.25
a10_b10_c50_v2	376 × 366	50.00	0.00	4.03	0.34
a10_b10_c50_v3	351 × 341	49.40	0.24	6.38	0.29
a10_b10_c50_v4	286 × 276	48.00	0.00	1.67	0.05
a10_b10_c50_v5	320 × 310	51.00	0.00	1.84	0.12
a10_b10_c60_v1	360 × 350	61.00	0.00	2.45	0.08
a10_b10_c60_v2	261 × 251	51.00	0.00	1.24	0.07
a10_b10_c60_v3	259 × 249	53.00	0.00	0.90	0.05
a10_b10_c60_v4	402 × 392	59.00	0.00	3.70	0.08
a10_b10_c60_v5	341 × 331	59.00	0.00	2.80	0.11
a10_b10_c70_v1	458 × 448	61.60	0.24	12.00	1.13
a10_b10_c70_v2	492 × 482	65.00	0.00	9.21	0.53
a10_b10_c70_v3	447 × 437	72.00	0.00	6.89	0.20
a10_b10_c70_v4	430 × 420	69.00	0.00	3.89	0.11
a10_b10_c70_v5	456 × 446	69.00	0.00	7.59	0.35
a10_b10_c80_v1	469 × 459	77.00	0.00	8.26	0.23
a10_b10_c80_v2	519 × 509	79.00	0.00	10.48	0.39
a10_b10_c80_v3	575 × 565	82.00	0.00	20.51	0.24
a10_b10_c80_v4	435 × 425	75.00	0.00	4.76	0.21
a10_b10_c80_v5	424 × 414	77.00	0.00	2.93	0.18
a10_b10_c90_v1	550 × 540	90.00	0.00	7.34	0.34
a10_b10_c90_v2	618 × 608	85.00	0.00	13.18	0.62
a10_b10_c90_v3	438 × 428	71.00	0.00	3.84	0.15
a10_b10_c90_v4	475 × 465	89.00	0.00	4.68	0.31
a10_b10_c90_v5	593 × 583	87.00	0.00	19.82	0.79
a10_b10_c100_v1	510 × 500	94.00	0.00	6.16	0.31
a10_b10_c100_v2	650 × 640	97.00	0.00	31.78	2.65
a10_b10_c100_v3	600 × 590	98.00	0.00	9.96	0.31
a10_b10_c100_v4	601 × 591	101.00	0.00	12.31	0.41

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Instância (a, b, c, v)	Parâmetros (N × M)	Média de Cores ($\text{bar}\chi_h$)	Erro Padrão (SE χ)	Tempo Médio (s)	Erro Padrão (SE t)
a10_b10_c100_v5	545 × 535	88.00	0.00	11.62	0.72
a15_b10_c20_v1	251 × 236	27.40	0.24	10.79	5.96
a15_b10_c20_v2	265 × 250	29.40	0.24	11.69	2.71
a15_b10_c20_v3	239 × 224	26.60	0.24	10.37	6.36
a15_b10_c20_v4	232 × 217	26.00	0.45	7.39	4.26
a15_b10_c20_v5	248 × 233	27.60	0.24	10.56	2.10
a15_b10_c30_v1	305 × 290	31.80	0.20	4.45	0.21
a15_b10_c30_v2	308 × 293	32.00	0.32	11.12	2.75
a15_b10_c30_v3	319 × 304	32.80	0.37	26.20	6.68
a15_b10_c30_v4	300 × 285	32.20	0.37	4.23	0.40
a15_b10_c30_v5	345 × 330	34.40	0.24	14.54	3.62
a15_b10_c40_v1	423 × 408	41.60	0.51	15.33	1.26
a15_b10_c40_v2	435 × 420	43.60	0.24	26.99	11.15
a15_b10_c40_v3	358 × 343	41.00	0.00	3.77	0.27
a15_b10_c40_v4	341 × 326	38.20	0.20	5.15	0.47
a15_b10_c40_v5	360 × 345	39.40	0.24	4.97	0.22
a15_b10_c50_v1	461 × 446	48.40	0.24	11.09	0.92
a15_b10_c50_v2	465 × 450	50.00	0.00	6.55	0.39
a15_b10_c50_v3	546 × 531	52.00	0.00	23.97	2.67
a15_b10_c50_v4	372 × 357	49.00	0.00	3.33	0.20
a15_b10_c50_v5	497 × 482	51.60	0.24	13.26	1.30
a15_b10_c60_v1	599 × 584	59.40	0.24	25.93	2.33
a15_b10_c60_v2	580 × 565	61.00	0.00	10.77	0.30
a15_b10_c60_v3	510 × 495	60.00	0.00	9.83	0.44
a15_b10_c60_v4	509 × 494	56.00	0.00	8.65	0.43
a15_b10_c60_v5	537 × 522	60.00	0.00	9.79	0.68
a15_b10_c70_v1	487 × 472	67.00	0.00	8.55	0.28
a15_b10_c70_v2	547 × 532	62.00	0.00	11.38	0.74
a15_b10_c70_v3	590 × 575	59.00	0.00	12.66	0.78
a15_b10_c70_v4	674 × 659	71.00	0.00	20.75	1.49
a15_b10_c70_v5	712 × 697	70.20	0.20	29.06	0.81
a15_b10_c80_v1	551 × 536	74.00	0.00	8.54	0.62
a15_b10_c80_v2	694 × 679	76.00	0.00	20.20	0.53
a15_b10_c80_v3	589 × 574	80.00	0.00	9.77	0.39
a15_b10_c80_v4	657 × 642	78.00	0.00	17.30	0.25
a15_b10_c80_v5	832 × 817	81.60	0.24	81.29	4.32
a15_b10_c90_v1	705 × 690	85.00	0.00	14.29	0.53
a15_b10_c90_v2	820 × 805	89.00	0.00	45.12	2.04
a15_b10_c90_v3	782 × 767	83.00	0.00	31.79	1.91
a15_b10_c90_v4	711 × 696	91.00	0.00	14.44	0.43
a15_b10_c90_v5	666 × 651	91.00	0.00	10.13	0.47
a15_b10_c100_v1	876 × 861	94.00	0.00	40.49	1.48
a15_b10_c100_v2	750 × 735	100.00	0.00	16.93	0.43
a15_b10_c100_v3	939 × 924	102.00	0.00	48.51	1.95
a15_b10_c100_v4	774 × 759	90.00	0.00	33.42	2.25
a15_b10_c100_v5	783 × 768	99.00	0.00	23.71	1.05
a20_b10_c20_v1	289 × 269	30.20	0.20	26.32	6.42

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Instância (a, b, c, v)	Parâmetros (N × M)	Média de Cores ($\text{bar}\chi_h$)	Erro Padrão (SE χ)	Tempo Médio (s)	Erro Padrão (SE t)
a20_b10_c20_v2	327 × 307	33.00	0.32	17.06	4.50
a20_b10_c20_v3	318 × 298	32.20	0.37	15.59	3.48
a20_b10_c20_v4	309 × 289	31.00	0.45	39.80	11.35
a20_b10_c20_v5	318 × 298	31.40	0.51	19.71	4.31
a20_b10_c30_v1	391 × 371	34.80	0.49	33.20	7.06
a20_b10_c30_v2	448 × 428	39.00	0.32	47.75	9.78
a20_b10_c30_v3	433 × 413	38.60	0.40	39.81	3.04
a20_b10_c30_v4	429 × 409	37.20	0.49	38.00	5.56
a20_b10_c30_v5	427 × 407	37.60	0.81	56.62	18.95
a20_b10_c40_v1	595 × 575	48.00	0.32	57.26	8.37
a20_b10_c40_v2	580 × 560	46.60	0.40	124.51	48.23
a20_b10_c40_v3	503 × 483	43.40	0.24	19.60	1.65
a20_b10_c40_v4	483 × 463	43.40	0.40	17.00	2.51
a20_b10_c40_v5	545 × 525	46.40	0.24	47.95	5.35
a20_b10_c50_v1	621 × 601	51.80	0.37	39.07	5.69
a20_b10_c50_v2	674 × 654	53.60	0.51	48.82	3.78
a20_b10_c50_v3	710 × 690	54.80	0.20	40.27	1.96
a20_b10_c50_v4	589 × 569	51.40	0.24	19.98	1.23
a20_b10_c50_v5	643 × 623	54.20	0.20	100.09	35.35
a20_b10_c60_v1	845 × 825	62.00	0.71	110.53	11.46
a20_b10_c60_v2	688 × 668	58.40	0.24	26.53	1.69
a20_b10_c60_v3	755 × 735	61.80	0.58	37.85	2.89
a20_b10_c60_v4	743 × 723	59.00	0.32	47.79	2.97
a20_b10_c60_v5	678 × 658	60.00	0.00	19.48	1.14
a20_b10_c70_v1	863 × 843	71.00	0.00	36.28	0.95
a20_b10_c70_v2	624 × 604	55.80	0.20	22.73	2.41
a20_b10_c70_v3	825 × 805	66.40	0.24	43.49	1.51
a20_b10_c70_v4	818 × 798	65.20	0.37	49.64	3.72
a20_b10_c70_v5	819 × 799	64.80	0.37	66.94	8.68
a20_b10_c80_v1	923 × 903	78.00	0.00	57.87	4.41
a20_b10_c80_v2	918 × 898	78.20	0.20	64.35	4.83
a20_b10_c80_v3	1028 × 1008	78.60	0.40	89.51	6.87
a20_b10_c80_v4	867 × 847	81.20	0.20	44.21	0.92
a20_b10_c80_v5	999 × 979	75.60	0.40	97.57	11.86
a20_b10_c90_v1	1013 × 993	86.00	0.00	45.48	1.23
a20_b10_c90_v2	1017 × 997	91.00	0.00	41.08	3.71
a20_b10_c90_v3	841 × 821	87.00	0.00	26.89	0.81
a20_b10_c90_v4	1028 × 1008	85.00	0.00	66.25	5.32
a20_b10_c90_v5	1063 × 1043	88.00	0.00	69.81	3.36
a20_b10_c100_v1	1027 × 1007	95.00	0.00	39.82	1.00
a20_b10_c100_v2	1192 × 1172	95.00	0.00	153.41	11.33
a20_b10_c100_v3	1059 × 1039	99.00	0.00	82.49	4.10
a20_b10_c100_v4	1104 × 1084	94.00	0.00	85.08	3.20
a20_b10_c100_v5	1189 × 1169	99.00	0.00	87.29	7.38
a25_b10_c20_v1	387 × 362	35.40	0.24	50.33	12.91
a25_b10_c20_v2	398 × 373	36.00	0.45	30.92	5.45
a25_b10_c20_v3	403 × 378	36.60	0.24	42.22	17.00

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Instância (a, b, c, v)	Parâmetros (N × M)	Média de Cores ($\text{bar}\chi_h$)	Erro Padrão (SE χ)	Tempo Médio (s)	Erro Padrão (SE t)
a25_b10_c20_v4	372 × 347	35.80	0.37	40.60	3.87
a25_b10_c20_v5	398 × 373	36.60	0.24	47.31	15.74
a25_b10_c30_v1	557 × 532	43.20	0.86	59.01	20.07
a25_b10_c30_v2	544 × 519	42.00	0.32	72.29	20.35
a25_b10_c30_v3	513 × 488	41.80	0.37	73.34	16.85
a25_b10_c30_v4	525 × 500	41.80	0.37	71.83	11.93
a25_b10_c30_v5	528 × 503	41.60	0.68	54.38	10.99
a25_b10_c40_v1	604 × 579	44.40	0.68	71.15	11.43
a25_b10_c40_v2	655 × 630	48.00	0.89	114.05	15.24
a25_b10_c40_v3	634 × 609	47.00	0.55	104.91	18.99
a25_b10_c40_v4	692 × 667	49.20	0.49	159.06	44.28
a25_b10_c40_v5	625 × 600	46.80	0.37	92.62	13.79
a25_b10_c50_v1	797 × 772	55.60	0.68	148.67	33.44
a25_b10_c50_v2	749 × 724	53.00	0.71	65.40	4.51
a25_b10_c50_v3	762 × 737	54.20	0.20	79.22	2.36
a25_b10_c50_v4	849 × 824	57.60	0.40	334.08	83.91
a25_b10_c50_v5	789 × 764	54.00	0.71	84.07	4.23
a25_b10_c60_v1	814 × 789	61.60	0.24	59.46	5.64
a25_b10_c60_v2	882 × 857	62.80	0.37	77.52	10.76
a25_b10_c60_v3	865 × 840	62.20	0.20	64.04	3.87
a25_b10_c60_v4	913 × 888	63.00	0.71	77.71	5.96
a25_b10_c60_v5	887 × 862	63.00	0.45	100.43	14.76
a25_b10_c70_v1	1030 × 1005	71.60	0.40	99.09	8.96
a25_b10_c70_v2	1013 × 988	71.00	0.71	285.69	81.99
a25_b10_c70_v3	1028 × 1003	69.60	0.60	112.78	6.82
a25_b10_c70_v4	1004 × 979	72.40	0.75	104.80	5.12
a25_b10_c70_v5	949 × 924	67.40	0.51	180.79	21.48
a25_b10_c80_v1	1071 × 1046	78.00	0.00	74.24	2.68
a25_b10_c80_v2	1275 × 1250	81.80	0.58	404.69	26.67
a25_b10_c80_v3	1339 × 1314	85.00	0.71	767.91	117.42
a25_b10_c80_v4	1099 × 1074	82.40	0.40	135.13	10.09
a25_b10_c80_v5	1277 × 1252	79.80	0.58	423.63	31.01
a25_b10_c90_v1	1220 × 1195	90.00	0.00	109.55	4.95
a25_b10_c90_v2	1128 × 1103	79.00	0.00	78.86	4.53
a25_b10_c90_v3	1201 × 1176	91.20	0.20	199.32	24.09
a25_b10_c90_v4	1077 × 1052	89.00	0.00	51.30	2.59
a25_b10_c90_v5	1435 × 1410	91.00	0.55	328.14	23.39
a25_b10_c100_v1	1373 × 1348	99.40	0.24	208.15	7.74
a25_b10_c100_v2	1480 × 1455	98.00	0.00	344.86	28.23
a25_b10_c100_v3	1574 × 1549	102.00	0.32	654.16	63.79
a25_b10_c100_v4	1630 × 1605	101.40	0.24	646.24	27.97
a25_b10_c100_v5	1456 × 1431	97.00	0.00	296.83	17.10