

BAlI-Phy Benchmarks

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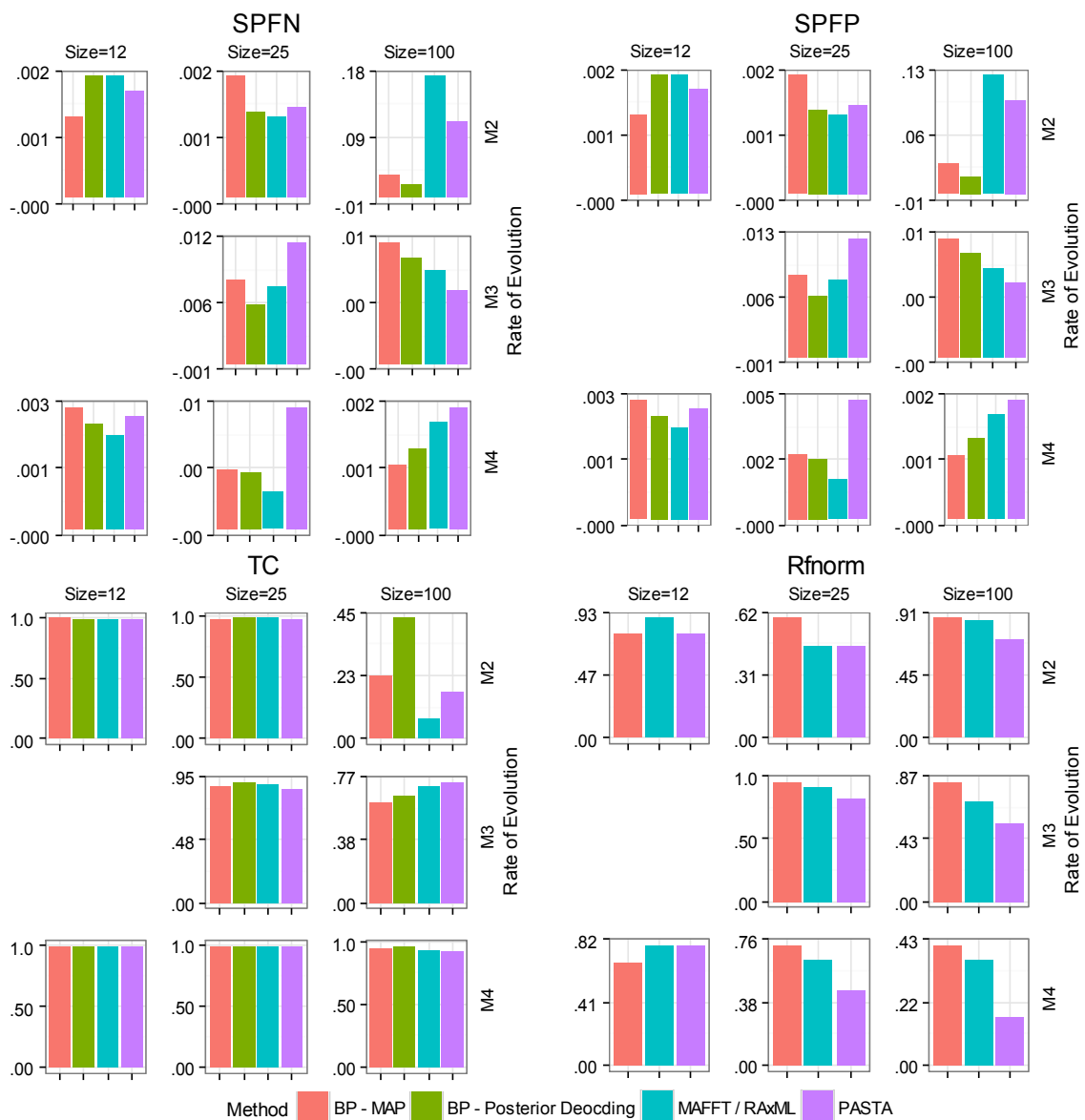
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Benchmarking BAli-Phy Experiments

- Testing multiple sequence alignment and tree generation from BAli-Phy vs. two other methods to understand:
 - Alignment Error
 - Tree Error
 - Convergence Rates / Running Time
- 9 Simulated Datasets (Actually 8):
 - 12, 25, 100 taxa
 - 3 Rates of Evolution (named M2, M3, M4 in order from hardest to easiest)
 - M3-12 had an error ☹️
- 4 Alignment, 3 Tree Methods:
 - BAli-Phy MAP alignment/tree
 - BAli-Phy Posterior Decoding alignment only
 - PASTA alignment/tree
 - MAFFT alignment + RAxML tree

Results

Relative Results (Note: All Axes Vary)

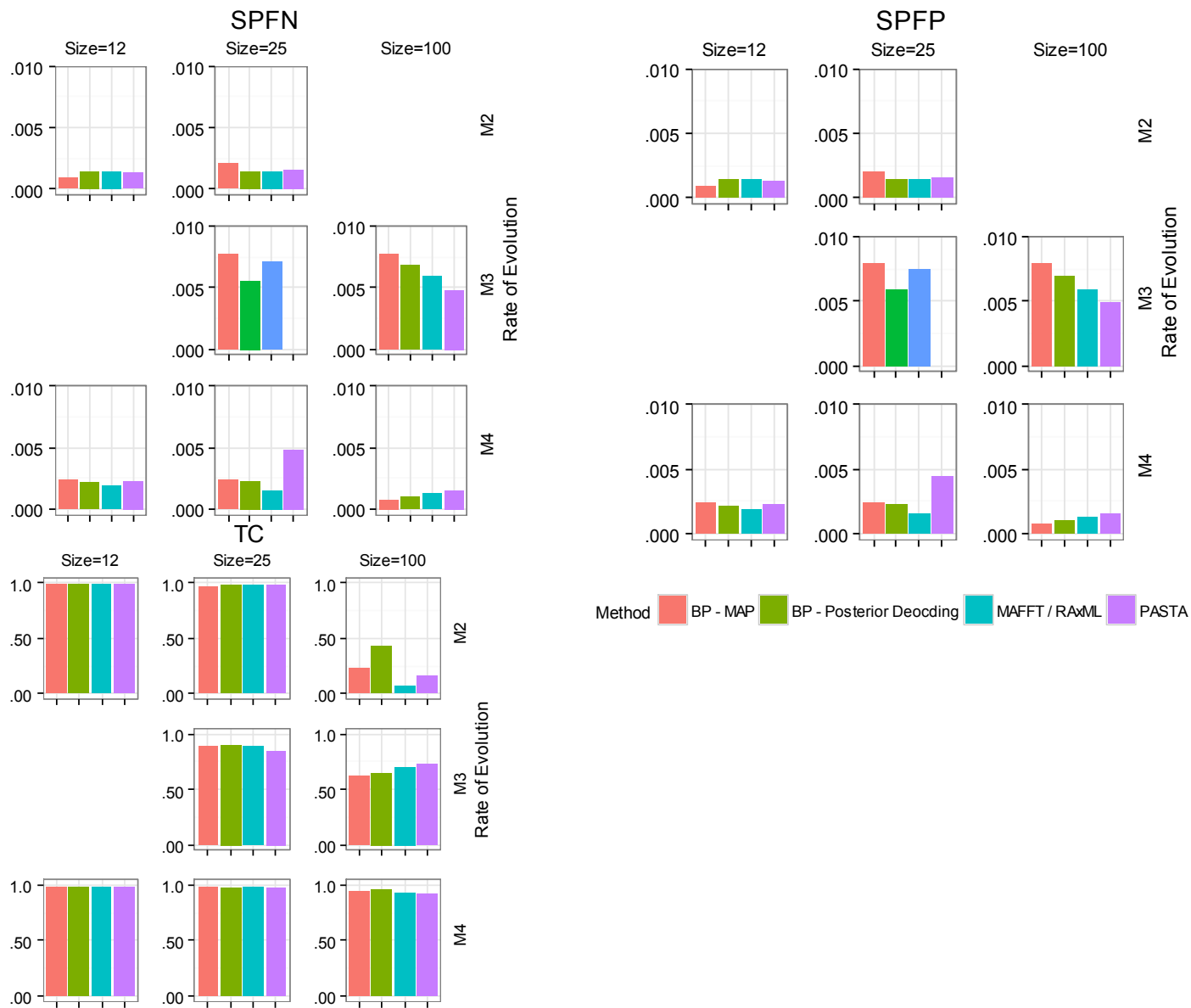


Notes:

- All data sets have *very* low alignment error except for M2-100 (the hardest).
- Tree error rates are quite high. Possibly an artifact of Indelible data.
- Definitions:
 - SPFN: False Negative Rate
 - SPFP: False Positive Rate
 - TC: Total Column Score
 - Rfnorm: Tree Error (RF Distance Normalized)

Results

Absolute Results



Results

BAlI-Phy Convergence (ESS) Values by Parameter

Parameter	Size 12			Size 25			Size 100		
	M2	M3	M4	M2	M3	M4	M2	M3	M4
prior	1,499		2,987	1,338	2,260	1,151	298	790	444
prior_A1	66,472		42,900	19,993	18,999	6,242	196	140	1,074
likelihood	90,049		73,589	41,533	32,185	27,482	268	54	1,204
logp	2,062		2,987	1,850	3,463	1,515	276	99	449
Main.mu1	417,929		413,302	176,506	165,240	174,458	20,516	21,047	23,182
S1.TN.kappaPur	160,939		163,454	56,436	60,042	47,819	54	88	601
S1.TN.kappaPyr	171,642		177,824	48,557	47,987	57,579	34	81	475
S1.F.piA	103,396		101,917	26,900	29,841	36,365	30	66	282
S1.F.piG	95,433		94,631	35,145	28,746	30,379	34	57	530
S1.F.piT	101,148		100,422	36,201	29,021	34,880	30	48	233
S1.F.piC	94,158		92,904	31,277	28,478	32,811	32	93	823
I1.RS07.logLambda	396,675		313,605	165,596	139,828	166,277	9,570	14,500	22,236
I1.RS07.meanIndelLength	204,421		202,094	98,962	95,623	100,059	8,422	16,077	17,693
A1	47,739		46,467	14,867	21,333	19,124	144	1,495	2,718
#indels1	55,478		37,838	17,013	19,260	4,602	170	134	1,041
indels1	47,735		43,546	18,250	18,924	11,222	276	1,563	1,880
#substs1	125,044		124,461	27,980	39,626	25,653	109	77	337
T	349,651		354,225	142,860	107,052	148,367	85	152	16,738