laphtc

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USING PICHI

In this chapter we describe how to use pichi.

IMPLEMENTATION DETAILS

Here we will describe the implementation details of laphtc.

DIAGRAM BENCHMARK TESTS

In this section we list the topologically distinct contraction diagrams that are needed for doing spectroscopy on hadrons. We restrict ourselves to meson- and baryon-states and we only include diagrams that are needed for 1-1, 1-2 and 2-2 scattering. The intention is to see which way of evaluating the diagram yields the best performance. As we will see, the performance is very dependent on the order of contractions, so knowing which one is the fastest is important.

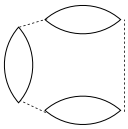
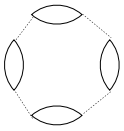
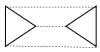
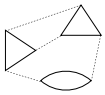
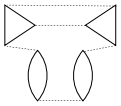
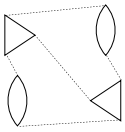
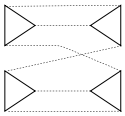
Diagram	Character rep.	Contraction pattern	Time
	A_{aa}	A_{aa}	53(9) µs
	$A_{ab}B_{ab}$	$A_{ab}B_{ab}$	0.37(10) ms
	$A_{ab}B_{bc}C_{ac}$	$A_{ab}B_{bc} \to D_{ac}$ $D_{ac}C_{ac}$	1.3(13) ms
	$A_{ab}B_{bc}C_{cd}D_{ad}$	$A_{ab}B_{bc} \to E_{ac}$ $E_{ac}C_{cd} \to F_{ad}$ $F_{ad}\,D_{ad}$	1.5(9) ms
	$A_{abc}B_{abc}$	$A_{abc}B_{abc}$	13.2(7) ms
	$A_{abc}B_{abd}C_{cd}$	$A_{abc}B_{abd} \to D_{cd}$ $D_{cd}C_{cd}$	0.739(5) s
		$A_{abc}C_{cd} \to D_{abd}$ $D_{abd}B_{abd}$	65(5) ms

Diagram	Character rep.	Contraction pattern	Time
	$A_{abc}B_{abd}C_{ce}D_{de}$	$A_{abc}B_{abd} \to E_{cd}$ $E_{cd}C_{ce} \to F_{de}$ $F_{de}D_{de}$	0.738(5) s
		$A_{abc}C_{ce} \to E_{abe}$ $B_{abd}D_{de} \to F_{abe}$ $E_{abe}F_{abe}$	0.119(16) s
		$C_{ce}D_{de} \to E_{cd}$ $A_{abc}E_{cd} \to F_{abd}$ $F_{abd}B_{abd}$	68.5(17) ms
	$A_{abc}B_{ade}C_{bd}D_{ce}$	$A_{abc}B_{ade} \to E_{bcde}$ $E_{bcde}C_{bd} \to F_{ce}$ $F_{ce}D_{ce}$	1.88(9) s
		$A_{abc}C_{bd} \to E_{acd}$ $E_{acd}B_{ade} \to F_{ce}$ $F_{ce}D_{ce}$	0.779(6) s
		$A_{abc}C_{bd} \to E_{acd}$ $B_{ade}D_{ce} \to F_{adc}$ $E_{acd}F_{adc}$	87(8) ms
		$A_{abc}C_{bd} \to E_{acd}$ $E_{acd}D_{ce} \to F_{ade}$ $F_{ade}B_{ade}$	87(3) ms
	$A_{abc}B_{abd}C_{def}D_{cef}$	$A_{abc}B_{abd} \to E_{cd}$ $E_{cd}C_{def} \to F_{cef}$ $F_{cef}D_{cef}$	0.762(9) s
		$A_{abc}B_{abd} \to E_{cd}$ $C_{def}D_{cef} \to F_{dc}$ $E_{cd}F_{dc}$	1.500(4) s
		$A_{abc}D_{cef} \to E_{abef}$ $B_{abd}C_{def} \to F_{abef}$ $E_{abef}F_{abef}$	4.55(4) s
		$A_{abc}D_{cef} \to E_{abef}$ $E_{abef}B_{abd} \to F_{efd}$ $E_{efd}C_{def}$	48.4(2) s

THE TODO-LIST

Here follows a list of things not yet implemented in pichi, but to come in the future.