

Pensieve header: An attempt on a concise implementation of the FastKh algorithm.

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<< KnotTheory`
Loading KnotTheory` version of February 5, 2013, 3:48:46.4762.
Read more at http://katlas.org/wiki/KnotTheory.

◦ is esc-sc-esc.

σ_°τ_ := PermutationProduct[τ, σ];
EquivalenceClasses[λ_List] := Module[{ρ}, Fold[
  (ρ = First /@ Position[#1, #2];
  Append[Delete[#1, List /@ ρ], Union@@ (#1[[ρ]])] &,
  λ, Union @@ λ
] // SortBy[#, First] &];
EquivalenceClasses[λ_Cycles] := EquivalenceClasses[Join@@ Identity@@@ {λ}];

EquivalenceClasses[{{1, 2}, {2, 3}, {4, 5}, {2, 7}, {7, 6}}]
{{1, 2, 3, 6, 7}, {4, 5}}

c1 = Cob[Cycles@{{1, 2}, {3, 4}}, Cycles@{{2, 3}, {1, 4}}, dot[1]]
Cob[Cycles[{{1, 2}, {3, 4}}], Cycles[{{1, 4}, {2, 3}}], dot[1]]

EquivalenceClasses[Cycles@{{1, 2}, {3, 4}}, Cycles@{{2, 3}, {1, 4}}]
{{1, 2, 3, 4}}

DotRule[λ_Cycles] := DotRule[λ] = Replace[
  EquivalenceClasses[λ],
  c_ -> ((# -> First[c]) & /@ c), {1}
] // Flatten

{β = Cycles@{{1, 2}, {3, 4}}, τ = Cycles@{{2, 3}, {1, 4}}}
{Cycles[{{1, 2}, {3, 4}}], Cycles[{{1, 4}, {2, 3}}]}

DotRule[β, τ]
{1 -> 1, 2 -> 1, 3 -> 1, 4 -> 1}

Disks[λ_Cycles] := Disks[λ] = First /@ EquivalenceClasses[λ]

Disks[β, τ]
{1}

VCLaw[Cob[β_Cycles, μ_Cycles], Cob[μ_Cycles, τ_Cycles]] := Module[
  {},
]
```