

Pensieve header: ZeroCo, the global picture.

```
SetDirectory["C:\\drorbn\\AcademicPensieve\\Projects\\OneCo-1604\\Zero"];
```

```
<< ZeroLocal.m
```

```
In "T before H" conventions. Internal use symbols: {rr, pp}
```

```
Export
```

```
Exporting Snips\Ejk.pdf...
```

```
Exporting Snips\GlobalGeneralities.pdf...
```

```
Exporting Snips\VerifyingEjk.pdf...
```

```
Done.
```

```
Done.
```

## Global Generalities

TSD for "Tail Scattering Data"

GlobalGeneralities

```
TSD[λ_]j_ := Lookup[λ, j, UU@a[1, j, h∞]];
UU[u_] // γ_TSD := CF[u /. λ_a ⇒ γ@λ];
TSD /: (γ_TSD)-1 := Module[{S = Keys @@ γ, m},
  m = Table[Coefficient[γi, a[j, h∞]], {i, S}, {j, S}] // Inverse;
  TSD@<|Table[S[[α]] →
    CF@UU@Sum[a[m[[α, β]], S[[β]], h∞], {β, Length@S}],
  {α, Length@S}]|>
];
a[f_, j_, k_] // γ_TSD := Module[{S = Keys @@ γ, γi},
  Switch[{MemberQ[S, j], MemberQ[S, k]},
  {False, False}, UU@a[f, j, k],
  {True, False}, γj /. a[g_, i_, h∞] ⇒ a[f g, i, k],
  {False, True}, (γi = γ-1;
  CF@Sum[
    γ[bb[S ∪ {j}][γi, UU@a[f, j, k]]] /. {
      a[_ , i, h∞] ⇒ 0, a[g_, l_, h∞] ⇒ a[g/bi, l, i]},
    {i, S}],
  {True, True}, ct[h∞, t∞][γ@a[f, j, h∞], γ@a[1, t∞, k]]
]];

```

## Ea & R

Ejk

$$\begin{aligned} \mathbf{Ea}[t_-, j_-, k_-] &:= \text{TSD} \left[ \left\langle \left| \begin{aligned} j &\rightarrow \text{CF@UU}[a[1, j, h\infty]], \\ k &\rightarrow \text{CF@UU}[a[e^{tb_j}, k, h\infty] + a[-\frac{(-1 + e^{tb_j}) b_k}{b_j}, j, h\infty]] \right| \right\rangle \right]; \\ \mathbf{R}[j_-, k_-] &:= \mathbf{Ea}[1, j, k] \end{aligned}$$

VerifyingEjk

$$\{\mathbf{Ea}[t, 1, 2]_1, \mathbf{Ea}[t, 1, 2]_2\} /. t \rightarrow 0$$

VerifyingEjk

$$\{\text{UU}[a[1, 1, h\infty]], \text{UU}[a[1, 2, h\infty]]\}$$

VerifyingEjk

$$\{\mathbf{D}[\mathbf{Ea}[t, 1, 2]_1, t], \mathbf{D}[\mathbf{Ea}[t, 1, 2]_2, t]\}$$

VerifyingEjk

$$\{\text{UU}[0], \text{UU}[a[e^{tb_1} b_1, 2, h\infty] + a[-e^{tb_1} b_2, 1, h\infty]]\}$$

VerifyingEjk

$$\{\mathbf{D}[\mathbf{Ea}[t, 1, 2]_1, t] - \mathbf{bb}[1, 2][\text{UU}[a[1, 1, 2]], \mathbf{Ea}[t, 1, 2]_1], \\ \mathbf{D}[\mathbf{Ea}[t, 1, 2]_2, t] - \mathbf{bb}[1, 2][\text{UU}[a[1, 1, 2]], \mathbf{Ea}[t, 1, 2]_2]\}$$

VerifyingEjk

$$\{\text{UU}[0], \text{UU}[0]\}$$

$$\mathbf{R}[1, 2][a[f, 2, 3]]$$

$$\text{UU}[a[e^{b_1} f, 2, 3] + a[f \left( \frac{b_2}{b_1} - \frac{e^{b_1} b_2}{b_1} \right), 1, 3]]$$

$$\mathbf{Ea}[t, 3, 5]^{-1}$$

$$\text{TSD} \left[ \left\langle \left| 3 \rightarrow \text{UU}[a[1, 3, h\infty]], 5 \rightarrow \text{UU}[a[e^{-tb_3}, 5, h\infty] + a\left[\frac{b_5}{b_3} - \frac{e^{-tb_3} b_5}{b_3}, 3, h\infty\right]] \right| \right\rangle \right]$$

$$\mathbf{Ea}[-t, 3, 5]$$

$$\text{TSD} \left[ \left\langle \left| 3 \rightarrow \text{UU}[a[1, 3, h\infty]], 5 \rightarrow \text{UU}[a[e^{-tb_3}, 5, h\infty] + a\left[\frac{b_5}{b_3} - \frac{e^{-tb_3} b_5}{b_3}, 3, h\infty\right]] \right| \right\rangle \right]$$