

Startup

```
In[ ]:= SetDirectory["C:\\drorbn\\AcademicPensieve\\Projects\\SL2Portfolio2"];
<< KnotTheory` ;
<< "../Profile/Profile.m";
<< "Engine-Speedy.m";
<< "Objects.m";
<< "KT.m";
BeginProfile[];
PopupWindow[Button["Show Profile Monitor"],
Dynamic[PrintProfile[], UpdateInterval -> 3, TrackedSymbols -> {}]]
```

ParentDirectory: Argument File should be a positive machine-size integer, a nonempty string, or a File specification.

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ToFileName: String or list of strings expected at position 1 in ToFileName{{File, WikiLink, mathematica}}.

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Loading KnotTheory` version of January 20, 2015, 10:42:19.1122.

Read more at <http://katlas.org/wiki/KnotTheory>.

This is Profile.m of <http://www.drorbn.net/AcademicPensieve/Projects/Profile/>.

This version: June 2018. Original version: July 1994.

» Warning: On Sep 4 2019 I swapped the operations ϵ and η . Some incompatibilities may arise in older notebooks.

Out[]:= Show Profile Monitor

```
In[ ]:= $k = 1; (*ħ=γ=1;*)
```

```
In[ ]:= HL[ε_] := Style[ε, Background -> If[TrueQ@ε, Green, Red]];
```

```
In[ ]:= ba_i_ := sY_{i→-1,-1,1,1} // aΔ_{1→1,2} // aΔ_{2→2,3} // aS_3 // bΔ_{-1→-1,-2} // bΔ_{-2→-2,-3} // P_{-1,3} // P_{-3,1} // sm_{-2,2→i}
```

```
In[ ]:= ba_i
```

$$\mathbb{E}_{\{i\} \rightarrow \{i\}} \left[a_i \alpha_i + b_i \beta_i, \frac{y_i \eta_i}{\mathcal{A}_i} + x_i \xi_i + \frac{(1 - B_i) \eta_i \xi_i}{\hbar}, \right. \\ \left. 1 + \left(-x_i \beta_i \xi_i + a_i B_i \eta_i \xi_i + \frac{\gamma \hbar x_i y_i \eta_i \xi_i}{\mathcal{A}_i} + \frac{(\gamma - 3 \gamma B_i) y_i \eta_i^2 \xi_i}{2 \mathcal{A}_i} + \right. \right. \\ \left. \left. \frac{1}{2} (\gamma - 3 \gamma B_i) x_i \eta_i \xi_i^2 + \frac{(\gamma - 4 \gamma B_i + 3 \gamma B_i^2) \eta_i^2 \xi_i^2}{4 \hbar} \right) \epsilon + O[\epsilon]^2 \right]$$

```
In[ ]:= HL[dm_{i,j→k} ≡ ((sY_{i→2,2,1,1} sY_{j→-1,-1,-2,-2}) // sm_{-1,1→0} // ba_0 // sY_{0→-1,-1,1,1} // (am_{1,-2→k} bm_{2,-1→k}))]
```

Out[]:= True

In[*]:= **ba_{i,j}** := ((**SY_{i→i,0,0}** // **sn₀**) (**SY_{j→0,0,j,j}** // **sn₀**)) // **sm_{i,j→0}** // **ba₀** // **SY_{0→i,i,j,j}**;
ba_{i,j}

$$\text{Out[*]} = \mathbb{E}_{\{i,j\} \rightarrow \{i,j\}} \left[a_j \alpha_j + b_i \beta_i, \frac{y_i \eta_i}{\mathcal{A}_j} + x_j \xi_j + \frac{(1 - B_i) \eta_i \xi_j}{\hbar}, \right. \\ \left. 1 + \left(-x_j \beta_i \xi_j + a_j B_i \eta_i \xi_j + \frac{\gamma \hbar x_j y_i \eta_i \xi_j}{\mathcal{A}_j} + \frac{(\gamma - 3 \gamma B_i) y_i \eta_i^2 \xi_j}{2 \mathcal{A}_j} + \right. \right. \\ \left. \left. \frac{1}{2} (\gamma - 3 \gamma B_i) x_j \eta_i \xi_j^2 + \frac{(\gamma - 4 \gamma B_i + 3 \gamma B_i^2) \eta_i^2 \xi_j^2}{4 \hbar} \right) \epsilon + \mathbf{O}[\epsilon^2] \right]$$

In[*]:= **bm_{i1,i2→i}** // **ba_{i,j}**

$$\text{Out[*]} = \mathbb{E}_{\{i1,i2,j\} \rightarrow \{i,j\}} \left[a_j \alpha_j + b_i \beta_{i1} + b_i \beta_{i2}, \frac{y_i \eta_{i1}}{\mathcal{A}_j} + \frac{y_i \eta_{i2}}{\mathcal{A}_j} + x_j \xi_j + \frac{(1 - B_i) \eta_{i1} \xi_j}{\hbar} + \frac{(1 - B_i) \eta_{i2} \xi_j}{\hbar}, \right. \\ \left. 1 + \left(-\frac{y_i \beta_{i1} \eta_{i2}}{\mathcal{A}_j} - x_j \beta_{i1} \xi_j - x_j \beta_{i2} \xi_j + a_j B_i \eta_{i1} \xi_j + \frac{\gamma \hbar x_j y_i \eta_{i1} \xi_j}{\mathcal{A}_j} + \frac{(\gamma - 3 \gamma B_i) y_i \eta_{i1}^2 \xi_j}{2 \mathcal{A}_j} + \right. \right. \\ a_j B_i \eta_{i2} \xi_j + \frac{\gamma \hbar x_j y_i \eta_{i2} \xi_j}{\mathcal{A}_j} + \frac{(-1 + B_i) \beta_{i1} \eta_{i2} \xi_j}{\hbar} + \frac{(\gamma - 3 \gamma B_i) y_i \eta_{i1} \eta_{i2} \xi_j}{\mathcal{A}_j} + \\ \left. \frac{(\gamma - 3 \gamma B_i) y_i \eta_{i2}^2 \xi_j}{2 \mathcal{A}_j} + \frac{1}{2} (\gamma - 3 \gamma B_i) x_j \eta_{i1} \xi_j^2 + \frac{(\gamma - 4 \gamma B_i + 3 \gamma B_i^2) \eta_{i1}^2 \xi_j^2}{4 \hbar} + \right. \\ \left. \frac{1}{2} (\gamma - 3 \gamma B_i) x_j \eta_{i2} \xi_j^2 + \frac{(\gamma - 4 \gamma B_i + 3 \gamma B_i^2) \eta_{i1} \eta_{i2} \xi_j^2}{2 \hbar} + \frac{(\gamma - 4 \gamma B_i + 3 \gamma B_i^2) \eta_{i2}^2 \xi_j^2}{4 \hbar} \right) \epsilon + \mathbf{O}[\epsilon^2] \right]$$

In[*]:= **ba_{i1,j}** // **ba_{i2,j}** // **bm_{i1,i2→i}**

$$\text{Out[*]} = \mathbb{E}_{\{i1,i2,j\} \rightarrow \{i,j\}} \left[a_j \alpha_j + b_i \beta_{i1} + b_i \beta_{i2}, \frac{y_i \eta_{i1}}{\mathcal{A}_j} + \frac{y_i \eta_{i2}}{\mathcal{A}_j} + x_j \xi_j + \frac{(1 - B_i) \eta_{i1} \xi_j}{\hbar} + \frac{(1 - B_i) \eta_{i2} \xi_j}{\hbar}, \right. \\ \left. 1 + \left(-\frac{y_i \beta_{i1} \eta_{i2}}{\mathcal{A}_j} - x_j \beta_{i1} \xi_j - x_j \beta_{i2} \xi_j + a_j B_i \eta_{i1} \xi_j + \frac{\gamma \hbar x_j y_i \eta_{i1} \xi_j}{\mathcal{A}_j} + \frac{(\gamma - 3 \gamma B_i) y_i \eta_{i1}^2 \xi_j}{2 \mathcal{A}_j} + \right. \right. \\ a_j B_i \eta_{i2} \xi_j + \frac{\gamma \hbar x_j y_i \eta_{i2} \xi_j}{\mathcal{A}_j} + \frac{(-1 + B_i) \beta_{i1} \eta_{i2} \xi_j}{\hbar} + \frac{(\gamma - 3 \gamma B_i) y_i \eta_{i1} \eta_{i2} \xi_j}{\mathcal{A}_j} + \\ \left. \frac{(\gamma - 3 \gamma B_i) y_i \eta_{i2}^2 \xi_j}{2 \mathcal{A}_j} + \frac{1}{2} (\gamma - 3 \gamma B_i) x_j \eta_{i1} \xi_j^2 + \frac{(\gamma - 4 \gamma B_i + 3 \gamma B_i^2) \eta_{i1}^2 \xi_j^2}{4 \hbar} + \right. \\ \left. \frac{1}{2} (\gamma - 3 \gamma B_i) x_j \eta_{i2} \xi_j^2 + \frac{(\gamma - 4 \gamma B_i + 3 \gamma B_i^2) \eta_{i1} \eta_{i2} \xi_j^2}{2 \hbar} + \frac{(\gamma - 4 \gamma B_i + 3 \gamma B_i^2) \eta_{i2}^2 \xi_j^2}{4 \hbar} \right) \epsilon + \mathbf{O}[\epsilon^2] \right]$$

In[*]:= **HL** [(**bm_{i1,i2→i}** // **ba_{i,j}**) ≡ (**ba_{i1,j}** // **ba_{i2,j}** // **bm_{i1,i2→i}**)]

Out[*]= **True**