Diff-Op to Group-Ring

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9:40 PM

Present (unhappy) state:

$$\int \omega(x+y)e^{x+y}\phi(x)\psi(y) = \left\langle \omega(x+y), \widehat{e^{x+y}}\phi(x)\psi(y)\right\rangle$$

$$= \left\langle V\omega(x+y), V\widehat{e^{x+y}}\phi(x)\psi(y)\right\rangle = \langle \omega(x)\omega(y), \widehat{e^x}\widehat{e^y}V\phi(x)\psi(y)\rangle$$

$$= \langle \omega(x)\omega(y), \widehat{e^x}\widehat{e^y}\phi(x)\psi(y)\rangle = \int \omega(x)\omega(y)e^x e^y\phi(x)\psi(y)$$

Relies on: $Vw(x+y) = w(x)w(y)$
$V1 = 1$

not happy together

Now assume only $Vw^{1/2}(x+y) = w^{1/2}(x)\,w^{1/2}(y)$

$$\int w(x+y)e^{x+y}\phi(x)\psi(y) = \langle w^{1/2}(x+y), \widehat{e^{x+y}}\, w^{1/2}(x+y)\,\phi(x)\psi(y)\rangle$$

$$= \langle Vw^{1/2}(x+y), V\widehat{e^{x+y}}\, w^{1/2}(x+y)\,\phi(x)\psi(y)\rangle$$

$$= \langle w^{1/2}(x)w^{1/2}(y), \widehat{e^x}\widehat{e^y}\, Vw^{1/2}(x+y)\,\phi(x)\psi(y)\rangle$$

$$= \langle w^{1/2}(x)w^{1/2}(y), \widehat{e^x}\widehat{e^y}\, w^{1/2}(x)w^{1/2}(y)\,\phi(x)\psi(y)\rangle$$

$$= \int w(x)w(y)e^x e^y\phi(x)\psi(y)$$!