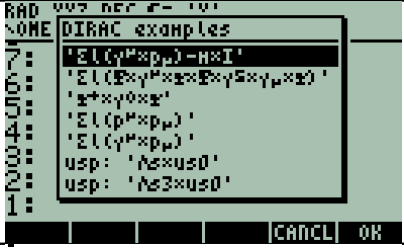
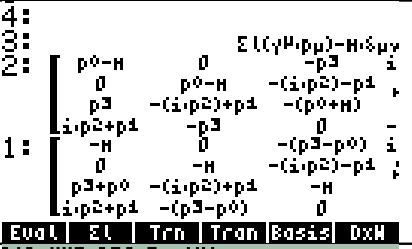
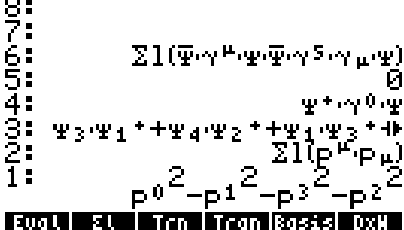


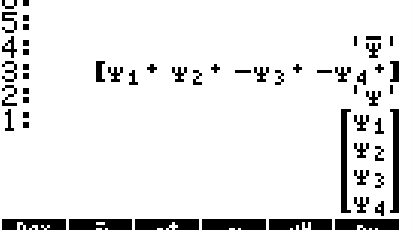
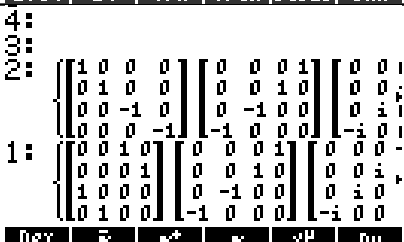
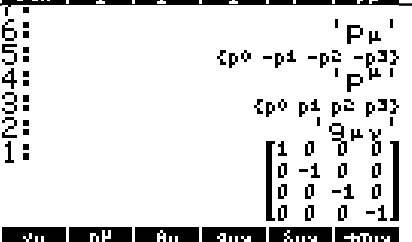

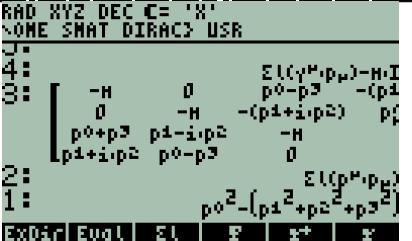
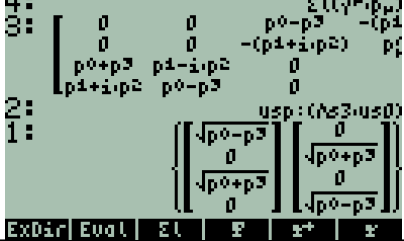




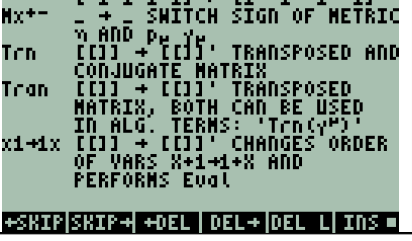


SMAT

<p>DIRAC: Dex: examples (1s)</p> <p>Eval: matrix $\gamma.p$-m in Dirac basis, Weyl basis (1s)</p>		
<p>DIRAC: Eval various expressions (1s)</p> <p>Metric?</p>		
<p>DIRAC: Basis: displays current basis, DxW: switches from Dirac to Weyl and back (1s)</p> <p>wavefunctions (1s)</p>		
<p>DIRAC: matrices γ in Dirac, Weyl basis (0.1s)</p> <p>$p_\mu, p^\mu, g_{\mu\nu}$ (1s)</p>		
<p>DIRAC: matrices γ_5, γ_L in Weyl basis (0.1s)</p> <p>Evaluate expressions</p>		
<p>DIRAC: Evaluate expressions</p> <p>Help</p>		
<p>DIRAC: Help</p> <p>Help</p>		
<p>DIRAC: Help</p> <p>Help</p>		

<p>LORENTZ: Mexp rotation</p> <p>ExMexp: examples</p>	<pre> RAD WYZ DEC C= 'R' SE SMAT LORENTZ> USR 2: 0 0 0 0 0 0 0 0 0 -03 0 0 0 0 0 0 1: 1 0 0 0 0 COS(03) SIN(03) 0 0 -SIN(03) COS(03) 0 0 0 0 1 03 01 02 04 ExMexp Mexp Mtrhyp </pre>	<pre> 00: 01: 02: 03: 04: 05: 06: 07: 08: 09: 10: 11: </pre> <div style="border: 1px solid black; padding: 5px; margin: 5px;"> <p>Mexp examples</p> <p>$i \times 03 \times J3: \begin{bmatrix} 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{bmatrix}$</p> <p>$i \times 01 \times K1: \begin{bmatrix} 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{bmatrix}$</p> <p>$i \times 02 \times S0 \times M: \begin{bmatrix} 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{bmatrix}$</p> <p>$i \times 03 \times S42: \begin{bmatrix} 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{bmatrix}$</p> </div>
<p>LORENTZ: help</p>	<pre> SMAT LORENTZ: TRANSFORMATION OF VECTOR A: $U^{\mu} = \Lambda^{\mu}_{\nu} U^{\nu}$ OF SPINOR A: $\psi' = S \psi$ $\bar{\psi}' = \bar{\psi} S^{-1}$ 0=ANGLE OF ROTATION 0=RAPIDITY OF BOOST TANH(0)=V, COSH(0)=G, SINH(0)=G*V G=1/√(1-V^2), C=1 AUB - + LORENTZ BOOST OF VECTOR AUR - + LORENTZ ROTATION OF VECTOR GRAPH 01 02 03 04 ExMexp Mexp Mtrhyp OK </pre>	<pre> AUB - + LORENTZ BOOST OF VECTOR AUR - + LORENTZ ROTATION OF VECTOR ASB - + LORENTZ BOOST OF SPINOR (MEYER REPR.) ASD - + LORENTZ BOOST OF SPINOR (DIRAC REPR.) ASR - + LORENTZ ROTATION OF SPINOR (MEYER & DIRAC) EXY [0] + + [0] SUBSTITUTE RAPIDITY 0 BY G, SETS 01=0 GRAPH 01 02 03 04 ExMexp Mexp Mtrhyp OK </pre>
<p>LORENTZ: help</p>	<pre> YXU [0] + + [0] SUBSTITUTE BY V J1 - + 03 GENERATORS VECTOR ROTATION J1=-i*03i(AUR) K1 - + 03 GENERATORS VECTOR BOOST K1=-i*03i(AUB) S0,M,D - + 03 GENERATORS SPINOR BOOST K1=-i*03i(ASB,D) M=MEYER, D=DIRAC S1 - + 03 GENERATORS SPINOR ROTATION J1=-i*03i(ASR) (M8D) GRAPH 01 02 03 04 ExMexp Mexp Mtrhyp OK </pre>	<pre> S1 - + 03 GENERATORS SPINOR ROTATION J1=-i*03i(ASR) (M8D) 01 - + 03 PAULI MATRICES 02 - + 03 ROTATION ANGLES 03 - + 03 RAPIDITIES ExMexp - + [0] EXAMPLES FOR Mexp Mexp [0] + [0] MATRIX EXPONENTIAL Mtrhyp [0] + [0] EXP TO HYPERBOLIC, TRIG. FUNCTIONS GRAPH 01 02 03 04 ExMexp Mexp Mtrhyp OK </pre>
<p>SPIN: spin matrix ->Sxyz (s=1/2)</p> <p>spin matrix ->Sxyz (s=1)</p>	<pre> 2: 1: 0 t/2 0 0 t/2 0 0 0 0 0 t/2 0 0 0 0 t/2 01 02 03 04 ExMexp Mexp Mtrhyp </pre>	<pre> 00: 01: 02: 03: 04: 05: 06: 07: 08: 09: 10: 11: </pre> <div style="border: 1px solid black; padding: 5px; margin: 5px;"> <p>Sxyz examples</p> <p>$S_{12} = \begin{bmatrix} 0 & \frac{\sqrt{2} \cdot t}{2} & 0 & 0 \\ \frac{\sqrt{2} \cdot t}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2} \cdot t}{2} \\ 0 & 0 & \frac{\sqrt{2} \cdot t}{2} & 0 \end{bmatrix}$</p> <p>$S_{13} = \begin{bmatrix} 0 & 0 & \frac{\sqrt{2} \cdot t}{2} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2} \cdot t}{2} \\ \frac{\sqrt{2} \cdot t}{2} & 0 & 0 & 0 \\ \frac{\sqrt{2} \cdot t}{2} & 0 & 0 & 0 \end{bmatrix}$</p> <p>$S_{23} = \begin{bmatrix} 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{bmatrix}$</p> </div>
<p>SPIN: spin matrix ->Sxyz (s=2)</p> <p>->S2 (s=2)</p>	<pre> 2: 1: 0 t 0 0 0 0 t 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 01 02 03 04 ExMexp Mexp Mtrhyp </pre>	<pre> RAD WYZ DEC C= 'R' CHONE SMAT SPIN> USR 1: 0 t^2 0 0 0 0 0 0 t^2 0 0 0 0 0 0 t^2 0 0 0 0 0 0 t^2 0 0 0 0 0 0 t^2 0 0 0 0 0 0 01 02 03 04 ExMexp Mexp Mtrhyp </pre>
<p>SPIN: spin matrix ->Sxyz (s=2)</p> <p>->S2 (s=2)</p>	<pre> 2: 1: 0 t 0 0 0 0 t 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 01 02 03 04 ExMexp Mexp Mtrhyp </pre>	<pre> RAD WYZ DEC C= 'R' CHONE SMAT SPIN> USR 1: 0 t^2 0 0 0 0 0 0 t^2 0 0 0 0 0 0 t^2 0 0 0 0 0 0 t^2 0 0 0 0 0 0 t^2 0 0 0 0 0 0 01 02 03 04 ExMexp Mexp Mtrhyp </pre>
<p>SPIN: spin matrix ->Sxyz (s=2)</p> <p>->S2 (s=2)</p>	<pre> 2: 1: 0 t 0 0 0 0 t 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 01 02 03 04 ExMexp Mexp Mtrhyp </pre>	<pre> RAD WYZ DEC C= 'R' CHONE SMAT SPIN> USR 1: 0 t^2 0 0 0 0 0 0 t^2 0 0 0 0 0 0 t^2 0 0 0 0 0 0 t^2 0 0 0 0 0 0 t^2 0 0 0 0 0 0 01 02 03 04 ExMexp Mexp Mtrhyp </pre>
<p>SPIN: spin matrix ->Sxyz (s=2)</p> <p>->S2 (s=2)</p>	<pre> 2: 1: 0 t 0 0 0 0 t 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 01 02 03 04 ExMexp Mexp Mtrhyp </pre>	<pre> RAD WYZ DEC C= 'R' CHONE SMAT SPIN> USR 1: 0 t^2 0 0 0 0 0 0 t^2 0 0 0 0 0 0 t^2 0 0 0 0 0 0 t^2 0 0 0 0 0 0 t^2 0 0 0 0 0 0 01 02 03 04 ExMexp Mexp Mtrhyp </pre>

