Knots vs. Lie Algebras

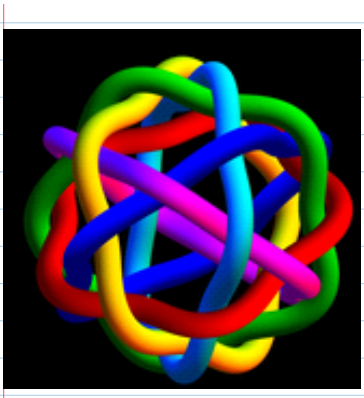
January-28-13
9:37 AM

too "simple"

too "regular"

re-make w/ white background.

2009-12



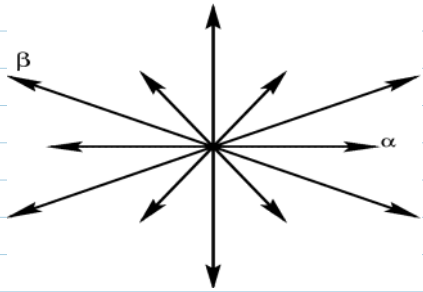
1. white background

2. too symmetric

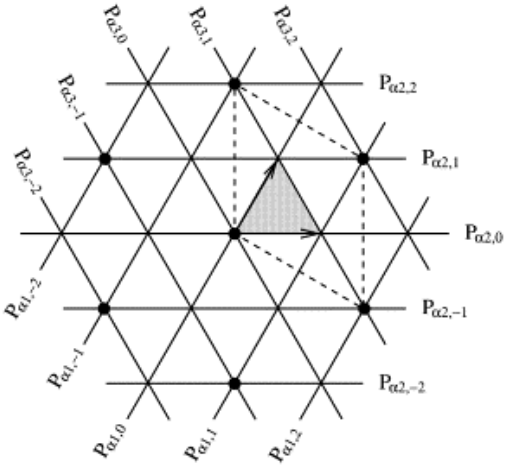
From http://www.gutenberg.org/files/13510/13510-h/13510-h.htm:

also many more!

From http://dimax.rutgers.edu/~sadowski/:



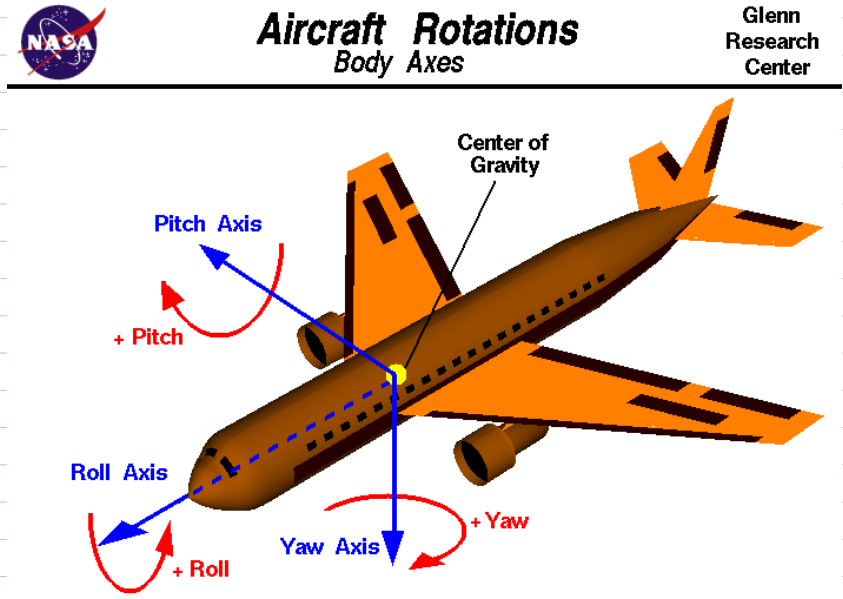
From http://www.sciencedirect.com/science/article/pii/S0550321302010647:



From http://en.wikipedia.org/wiki/Conformal_symmetry:

$$
\begin{aligned}
&[D, K_\mu] = -iK_\mu\,,\\
&[D, P_\mu] = iP_\mu\,,\\
&[K_\mu, P_\nu] = 2i\eta_{\mu\nu}D - 2iM_{\mu\nu}\,,\\
&[K_\mu, M_{\nu\rho}] = i(\eta_{\mu\nu}K_\rho - \eta_{\mu\rho}K_\nu)\,,\\
&[P_\rho, M_{\mu\nu}] = i(\eta_{\rho\mu}P_\nu - \eta_{\rho\nu}P_\mu)\,,\\
&[M_{\mu\nu}, M_{\rho\sigma}] = i(\eta_{\nu\rho}M_{\mu\sigma} + \eta_{\mu\sigma}M_{\nu\rho} - \eta_{\mu\rho}M_{\nu\sigma} - \eta_{\nu\sigma}M_{\mu\rho})\,,
\end{aligned}
$$

From http://www.grc.nasa.gov/WWW/k-12/airplane/rotations.html:



From http://nodnyl.com/english/background.html:

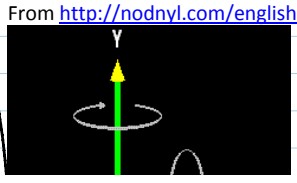
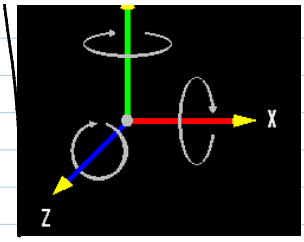


FIG. 52.—Midshipman's hitch.

Some celtic knot example.



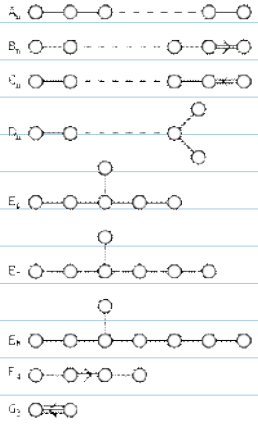
From http://www.chemie.uni-hamburg.de/nmr/insensitive/tutorial/en.lproj/spin.html:

$$\sigma_x = \frac{1}{2}\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$$

$$\sigma_y = \frac{1}{2}\begin{pmatrix} 0 & -i \\ i & 0 \end{pmatrix}$$

$$\sigma_z = \frac{1}{2}\begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$$

From http://en.wikipedia.org/wiki/Semisimple_Lie_algebra:



From http://commons.wikimedia.org/wiki/Category:Royal_Ontario_Museum: (higher res there)

From http://www.brit.co/gummy-worm-ice/: