

## HW2

### Wigner rotations for massive particles: helicity basis

Using the relation between the spin and the helicity representation of the states, derive the Wigner rotation associated to an infinitesimal rotation in the helicity representation and, using the result of HW1, the one associated to an infinitesimal boost. Verify explicitly that rotations preserve the helicity, while boosts do not, in general. Check that instead if the particle is highly energetic,  $E \gg m$ , the helicity is preserved also by boosts.