

PHY 745 – Problem Set #2

Finish reading Chapter 2 in **Dresselhaus² and Jorio**

1. Consider the following non-unitary representation of the $P(3)$ group.

$$\Gamma(E) = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \quad \Gamma(A) = \begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix} \quad \Gamma(B) = \begin{pmatrix} 1/2 & \sqrt{3}/4 \\ \sqrt{3} & -1/2 \end{pmatrix}$$
$$\Gamma(C) = \begin{pmatrix} 1/2 & -\sqrt{3}/4 \\ -\sqrt{3} & -1/2 \end{pmatrix} \quad \Gamma(D) = \begin{pmatrix} -1/2 & -\sqrt{3}/4 \\ \sqrt{3} & -1/2 \end{pmatrix} \quad \Gamma(F) = \begin{pmatrix} -1/2 & \sqrt{3}/4 \\ -\sqrt{3} & -1/2 \end{pmatrix}$$

Transform this representation into a unitary representation using the procedure discussed in your textbook and the lecture notes.