

V_2^3 IS EIGHT DIMENSIONAL, IN THE DECOMPOSITION OF S_3 ON V_2^3 , THERE ARE 4 COPIES OF $\mu=1=\lambda$ 1-DIM TRIVIAL REP,

$\boxed{123} |+++>$ CALLED $|A, 1, 1>$ SPANS $T_A(1)$

" $|++-> + |+-> + |-++>$ CALLED $|A, 2, 1>$ SPANS $T_A(2)$

" $|+-> + |-+> + |-->$ CALLED $|A, 3, 1>$ SPANS $T_A(3)$

" $|-->$ CALLED $|A, 4, 1>$ SPANS $T_A(4)$

2 STANDARD TABLEAU

THERE ARE TWO COPIES OF $\mu=3=m$ 2-DIM REP.

$$2|++> - |+-> - |-++> = |m, 1, 1>$$

$$2|+-> - |-+> - |++> = |m, 1, 2>$$

$$2|--> - |-+> - |+-> = |m, 2, 1>$$

$$2|-+> - |++> - |--> = |m, 2, 2>$$

SPAN $T_m(1)$

$T_m'(1)$

SPAN $T_m(2)$

$T_m'(2)$

AS FOR THE DECOMPOSITION OF THE ROTATIONS,

ALL THE 4 STATES OF THE λ IRREP OF S_3

TOGETHER CARRY THE 4-DIM $J=3/2$ IRREP OF $SO(3)$,

\rightarrow SPAN $T_\lambda'(1)$,

THE TWO STATES $|m, 1, 1> + |m, 2, 1>$ ARE THE TWO BASIS STATES OF THE FIRST $J=1/2$ IRREP \rightarrow SPAN $T_m'(1)$.

THE LAST TWO $|m, 1, 2> + |m, 2, 2>$ SPAN $T_m'(2)$ \rightarrow CARRY THE SECOND $J=1/2$ IRREP.

$|\lambda \alpha\rangle$ $S_m |\lambda \alpha\rangle$ MIXES α FOR FIXED YOUNG DIAG.
 YOUNG DIAG. STANDARD TABLEAU

$G_m |\lambda \alpha\rangle$ MIXES α FOR FIXED STANDARD TABLEAU