

# Particle Symmetries Problem Set 1 (2012)

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## Plethystic Exponentials

Compute the PE of the following representations and write down the corresponding Taylor series to all orders in the symmetrization fugacity. In other words, compute  $\text{PE}[\chi_R t]$  to all orders in  $t$ , where  $\chi_R$  is the character for each of the following representations.

1.  $[1, 0]$  of  $G_2$  of dimension 7.
2.  $[0, 1]$  of  $G_2$  of dimension 14.
3.  $[0, 0, 0, 1]$  of  $F_4$  of dimension 26.
4.  $[1, 0, 0, 0, 0, 0]$  of  $E_6$  of dimension 27.
5.  $[0, 0, 0, 0, 0, 0, 1]$  of  $E_7$  of dimension 56.