

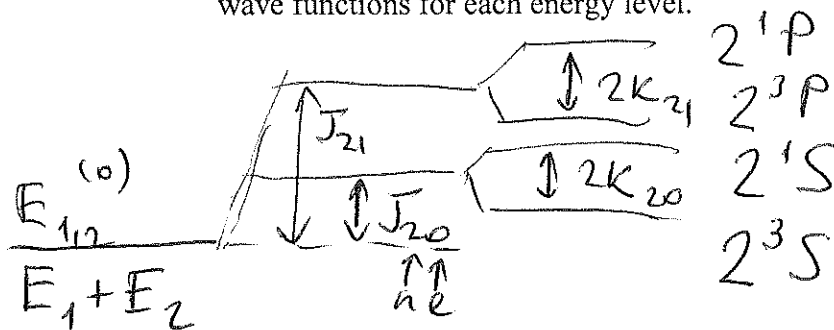
**Worksheet #12**

Monday, May 6, 2024

**Name**

**Questions (5 pts):**

1. Recall the description of Helium atom excited states where one electron has  $n = 1$  and the other one has  $n = 2$ . The energy levels are sketched below. Write suitable wave functions for each energy level.



\*\*\*\*\*

(leave question 2 for later in the class)

2. Keeping in mind Coulomb-like approximations at  $r \rightarrow 0$  and  $r \rightarrow \infty$ , sketch central field potential as a function of  $r$ .

**If you have time:** What do you expect from the energy levels obtained with this potential – what quantum numbers would they depend on? Why?