

Vyžiarenie fotónu  $\Rightarrow$  prachový medzír  
halidiamu

$$n_i \rightarrow n_f$$

$$E_i - E_f = h\nu = \hbar\omega$$

$$n_i \rightarrow E_i = -\frac{me^4}{8\epsilon_0^2 h^2} \left( \frac{1}{n_i^2} \right)$$

$$n_f \rightarrow E_f = -\frac{me^4}{8\epsilon_0^2 h^2} \left( \frac{1}{n_f^2} \right)$$

$$E_i - E_f = \frac{me^4}{8\epsilon_0^2 h^2} \left[ \left( -\frac{1}{n_i^2} \right) - \left( -\frac{1}{n_f^2} \right) \right] =$$

$$= \frac{me^4}{8\epsilon_0^2 h^2} \left( \frac{1}{n_f^2} - \frac{1}{n_i^2} \right)$$

$$\nu = \frac{E_i - E_f}{h} = \frac{me^4}{8\epsilon_0^2 h^3} \left( \frac{1}{n_f^2} - \frac{1}{n_i^2} \right)$$

Pre veľmi dlhú vlnu

$$\lambda = c/\nu \Rightarrow \frac{1}{\lambda} = \frac{\nu}{c} = \frac{me^4}{8\epsilon_0^2 ch^3} \left( \frac{1}{n_f^2} - \frac{1}{n_i^2} \right)$$

$$n_f = 1 \Rightarrow \frac{1}{\lambda} = \frac{me^4}{8\epsilon_0^2 ch^3} \left( \frac{1}{1^2} - \frac{1}{n_i^2} \right) \quad n = 2, 3, 4, \dots$$

*Spektrum vodíka*

Lymmanova séria	$n_f = 1$
Balmerova séria	$n_f = 2$
Paschenova séria	$n_f = 3$
Bracketova séria	$n_f = 4$
Pfundova séria	$n_f = 5$

Treba porovnať

$$\frac{me^4}{8\epsilon_0^2 ch^3} \quad S \quad R$$

Plati' ==