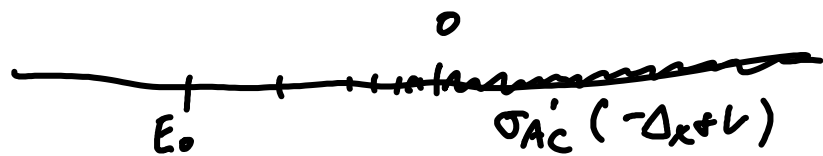
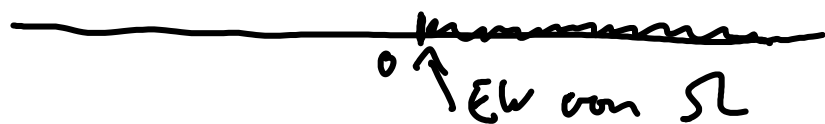


$$\sigma(-\Delta_x + V)$$



$$\sigma(H_f)$$



$$\sigma(H_f \sim \Delta_x + V)$$



$$(a_x(k)\psi)_{n-1}(k_1, \dots, k_{n-1}) = \sqrt{n} \psi_n(k, k_1, \dots, k_{n-1})$$

$$\underbrace{(a_x(f)\psi)_{n-1}(k_1, \dots, k_{n-1})}_{=} = \sqrt{n} \int_{\mathbb{R}^3} f(k) \psi_n(k, k_1, \dots, k_n) dk$$

$$= \int_{\mathbb{R}^3} f(k) a_x(k) \psi_n(k, k_1, \dots, k_{n-1}) dk$$