Electrostatics FRQ 1

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1. Where p^{8+} is the +8 charge and p^{3+} is the +3 charge (1)

$$\begin{aligned} F_{p^{8+}} &= k\frac{(2\cdot 10^{-6})(8\cdot 10^{-6}}{.05^2} \\ &= 57.6[\text{N}] \\ F_{p^{3+}} &= k\frac{(2\cdot 10^{-6})(3\cdot 10^{-6}}{.06^2} \\ &= 15[\text{N}] \\ F_{total} &= \sqrt{(57.6)^2+(15)^2} \\ &= 59.5[\text{N}] \\ \angle &= tan^{-1}\left(\frac{57.6}{15}\right) \\ &= 59.5[\text{N}] \text{ at } 75.5^\circ \end{aligned} \tag{1}$$