

77. (a) Since  $\vec{B}$  is uniform,

$$\vec{F}_B = \int_{\text{wire}} i d\vec{L} \times \vec{B} = i \left( \int_{\text{wire}} d\vec{L} \right) \times \vec{B} = i \vec{L}_{ab} \times \vec{B} ,$$

where we note that  $\int_{\text{wire}} d\vec{L} = \vec{L}_{ab}$ , with  $\vec{L}_{ab}$  being the displacement vector from  $a$  to  $b$ .

(b) Now  $\vec{L}_{ab} = 0$ , so  $\vec{F}_B = i \vec{L}_{ab} \times \vec{B} = 0$ .