

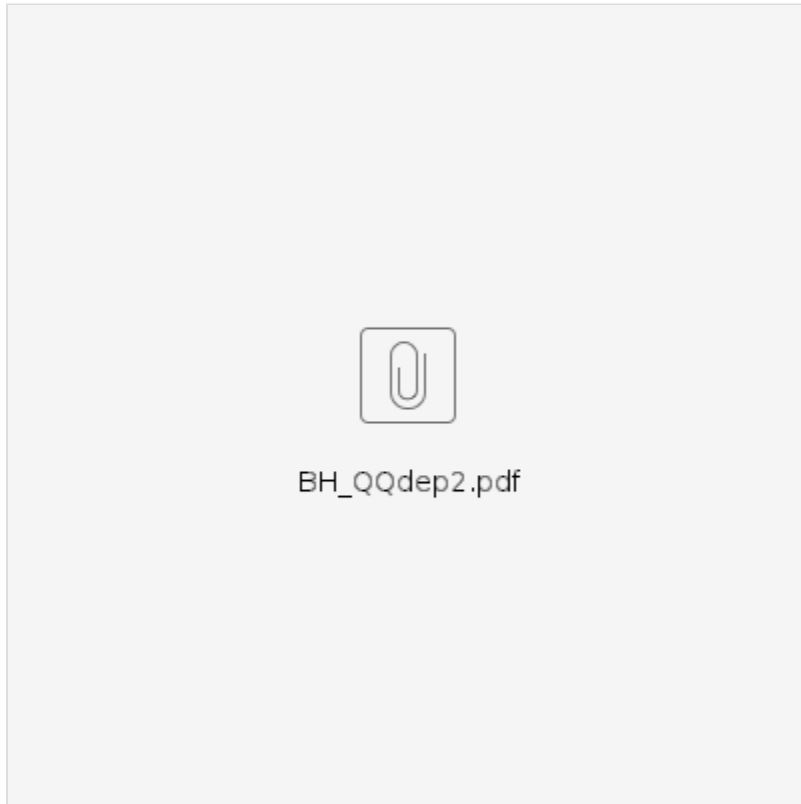
# First look at the azimuthal behavior of BH cross sections with $Q^2$ , $x_B$ , $t$ and $k$ .

The behavior of BH cross sections with  $Q^2$ ,  $x_B$ ,  $t$  and  $k$  is explored by varying each parameter in the range where valid cross section values could be obtained while keeping the rest of them fixed. The specific kinematics of the experimental data 'E00-110 experiment at JLab Hall A', where  $Q^2 = 1.82 \text{ GeV}^2$ ,  $x_B = 0.343$ ,  $t = -0.172$  and  $k = 5.7572 \text{ GeV}$ , was used.

## $Q^2$ dependence

The BH cross section dependence with  $Q^2$  has been explored at fixed values of  $x_B = 0.343$ ,  $t = -0.172$ , and  $k = 5.7572 \text{ GeV}$ . Starting at  $Q^2 = 1 \text{ GeV}^2$ , the maximum the value that can be reached out is  $3.6 \text{ GeV}^2$  when the rest of the parameters are fixed at the afford mentioned values.

The following figure shows the obtained cross section distributions varying  $Q^2$  from 1 to  $3.5 \text{ GeV}^2$  in steps of  $0.25 \text{ GeV}^2$ .



## $x_B$ dependence

$x_B$  was varied while keeping the fixed values:  $k = 5.7572 \text{ GeV}$ ,  $Q^2 = 1.82 \text{ GeV}^2$  and  $t = -0.172$ . Under these kinematics, only valid values of the BH cross section can be obtained when  $x_B$  lays between 0.171 and 0.378.

The graph shows the behavior of the cross section varying  $x_B$  in that range using step widths of 0.02.



BH\_xBdep.pdf

#### **$t$ dependence**

The next figure shows the  $t$  dependence for fixed  $k = 5.7572$  GeV,  $Q^2 = 1.82$  GeV<sup>2</sup> and  $x_B = 0.343$ . For those values, when  $t$  sets between -0.139 and -4.831 there are obtained defined values of the cross sections, but for any  $t$  smaller than -1.459 the cross section takes negative values. The graph shows the behavior of the cross section varying  $t$  in 0.12 step width. As seen on the graph, the cross section increases when  $t$  decreases up to -0.739. At that point, the cross section distribution decreases as  $t$  continues to decrease until  $t = -1.459$ . Any lower value of  $t$  will result in negative values of the cross section.



BH\_tdep.pdf

#### **$k$ dependence**

For fixed  $t = -0.172$ ,  $Q^2 = 1.82 \text{ GeV}^2$  and  $x_B = 0.343$ . The cross section takes valid values when  $k$  is greater than 2.9803 GeV and there is no higher limit for  $k$ . As  $k$  continue to increase, the cross section goes down to zero. The following graph shows the behavior of the BH cross section varying  $k$  in 2 GeV step width from 2.9803 GeV to 28.9803 GeV.



BH\_kdep.pdf