

Figure 1 displays three sets of box plots, labeled 1, 2, and 3, showing the distribution of the number of non-zero elements in the sparse matrix  $A$  for three different test cases. Each set contains three box plots for  $tx$ ,  $ty$ , and  $tz$ . The y-axis represents the number of non-zero elements, ranging from 0 to 100. The box plots are colored blue, and the whiskers are dashed black. Red '+' symbols represent individual data points. The distributions show that the number of non-zero elements generally increases from  $tx$  to  $ty$  to  $tz$ , and the spread of the data also increases.