Albertson and Collins defined the distinguishing number of a graph as the minimum number of colors needed to color the vertices of a graph so that only the trivial automorphism preserves the colors. Collins and Trenk defined the distinguishing chromatic number to be the minimum number of colors needed for a labeling which is both proper and distinguishing.

We will generalize the classic Nordhaus-Gaddum theorem for the chromatic number, namely that for a graph $G$,

$$\chi(G) + \chi(G') \leq |V(G)| + 1$$

to the distinguishing chromatic number and provide a new characterization of graphs that achieve equality in the above bound. (Received January 17, 2012)