## *ABSTRACT*

*The Special Region of Yogyakarta (DIY) is an area with high seismic potential because its area is close to the southern subduction zone of Java Island and has active faults. Seismic hazard analysis is essential for disaster mitigation and building management. This study aims to create a map of the distribution of earthquake prone areas and determine the distribution area with a seismic risk level based on the Peak Ground Acceleration (PGA) and Spectral Acceleration (SA) values using the Probabilistic Seismic Hazard Analysis (PSHA) method which can estimate the seismic risk at a location by considering the probability of earthquake intensity in a certain period of time in the future. Earthquake catalog data obtained from USGS, IRIS, and ISC from 1970-2023 were used in this study. The results obtained are a distribution map of PGA and SA values with a probability of being exceeded of 5% in 10 years, obtained PGA values ranging from 0.52 g - 0.77 g, SA values (T = 0.2 s) between 1.07 g - 1.51 g, and SA values (T = 1 s) between 0.33 g - 0.4 g, and a probability of being exceeded of 7% in 75 years with PGA values ranging from 0.97 g - 1.39 g, SA values (T = 0.2 s) between 1.96 g - 2.54 g, and SA values (T = 1 s) between 0.58 g - 0.74 g. Bantul Regency and the southern part of Gunung Kidul Regency are areas in the DIY region with the highest PGA values, namely, 0.7 g - 1.39 g and the highest SA for the probability of exceeding 5% in 10 years (T = 0.2 s) of 1.51 g and (T = 1 s) of 0.4 g, and the probability of exceeding 7% in 75 years (T = 0.2 s) of 2.54 g and (T = 1 s) of 0.74 g*



***Keywords**: Seismic hazard, Probabilistic Seismic Hazard Analysis (PSHA), Peak Ground Acceleration (PGA), Spectral Acceleration (SA).*