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## STABILITY ANALYSIS OF SCPUR MATHEMATICAL MODEL FOR THE SPREAD OF COVID-19 (CORONA VIRUS DISEASE-19)

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**Abstract.** This article discusses SCPUR mathematical model for the spread of COVID-19 using data of people with COVID-19 in Makassar City. In this model, the population class is divided into five classes: susceptible, asymptomatic infectious, reported symptomatic infectious, unreported symptomatic infectious, and recovered classes. The proportion of body immunity to the increase of infected individuals, the proportion of large-scale social restrictions, and the proportion of quarantine as a healing process are also added. The research begins by determining the equilibrium point of the model, namely the disease-free equilibrium point and the endemic equilibrium point. Then, the stability test is carried out using linearization method and the eigenvalues are determined. The value of the basic reproduction number is obtained using next-generation matrix method, where the initial state of the basic reproduction number value  $R_0 > 1$  mean COVID-19 will still exist in Makassar City. Treatment is carried out so that  $R_0 < 1$  which means Makassar City will be free of COVID-19.

**Keywords:** equilibrium point; basic reproduction number; COVID-19.

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