

## ANALISIS KESTABILAN MODEL SEIR UNTUK PENYEBARAN COVID-19 DENGAN PARAMETER VAKSINASI

### *Stability Analysis of SEIR Model for Covid-19 Spread with Vaccination Parameter*

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#### Abstrak

Covid-19 adalah penyakit menular yang disebabkan oleh coronavirus disease jenis baru, yaitu SARS-CoV-2. Oleh WHO, penyebaran Covid-19 telah ditetapkan sebagai pandemi global sejak 11 Maret 2020. Pada penelitian ini, penyebaran Covid-19 dimodelkan dengan menggunakan model matematika epidemik, yaitu model SEIR (*Susceptible, Exposed, Infected, and Recovered*) dengan memperhatikan faktor vaksinasi sebagai parameter. Selanjutnya, ditentukan titik ekuilibrium dan bilangan reproduksi dasar, serta diberikan analisis kestabilan pada model.

**Kata Kunci :** Covid-19, Model SEIR, Parameter Vaksinasi, Bilangan Reproduksi Dasar, Analisis Kestabilan.

#### Abstract

Covid-19 is an infectious disease caused by a new type of coronavirus disease, namely SARS-CoV-2. By WHO, the spread of Covid-19 has been designated as a global pandemic since March 11, 2020. In this study, the spread of Covid-19 was modeled using an epidemic mathematical model, namely the SEIR (*Susceptible, Exposed, Infected, and Recovered*) model by taking into account the vaccination factor as parameter. Next, the equilibrium point and the basic reproduction number are determined, and stability analysis is given to the model.

**Keywords:** Covid-19, SEIR Model, Vaccination Parameters, Basic Reproductive Numbers, Stability Analysis.

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