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**THE INVERSE SPECTRAL PROBLEM FOR THE DIFFERENTIAL  
EQUATION OF THE SECOND ORDER WITH SINGULARITY**

**Abstract**

*In this article, for given sequences  $\{\lambda_n\}$  and  $\{\mu_n\}$  the construction of differential operator, which is a singularity, is explained. In order to accomplish this,  $\lambda_n$  and  $\mu_n$  must have some certain asymptotics. This kind of asymptotic formulas depends on the regularity order of the function  $q(x)$ . This connection can be seen in the inverse problem which depends on the series of  $\{\lambda_n\}$  and  $\{\mu_n\}$ .*