Regression of Superconducting Critical Temperature: using a PCA-GridSearch-Adaboost Regression Model

Abstract-

Superconductivity is being studied since its discovery more than a century ago. The numerous applications of the superconductors made it a subject of intense research. Despite being studied for so long, some of its properties remain a mystery. One of the interesting properties of a super conductor is its critical temperature. The value of critical temperature is different for each superconducting material. This value is experimentally calculated by measuring resistance against the temperature of the material. In this project, by taking advantage of the immense increase of readily accessible and potentially relevant information, we develop several machine learning methods modeling critical temperature of a super conductor based on its chemical properties. The final model will give an estimate of critical temperature of a superconductor. This estimate provides confidence on a newly discovered material to continue further research on it.