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**Modeling the Degradation of Lithium Ion Batteries. Preliminary report.

Lithium Ion batteries continue to be the industry standard in rechargeable batteries due to their high energy transfer and low cost. However, occasionally, these batteries fail to function well and even explode. In order to understand and predict this volatile behavior, we model a healthy battery. We analyze data from a physical battery model at Oak Ridge National Labs under ideal circumstances and build in noise to the ideal model. (Received September 15, 2020)