Metadata for the dataset

Dataset for Towards Robust State Estimation for LFP Batteries: Model-in-the-Loop Analysis with Hysteresis Modeling and Perspectives for Other Chemistries

1. Data description

This dataset was developed for and is featured in the paper *Towards Robust State Estimation for LFP Batteries: Model-in-the-Loop Analysis with Hysteresis Modeling and Perspectives for Other Chemistries*. It includes data input and output for a Battery Management System (BMS) Model-in-the-Loop toolchain aimed at algorithm evaluation, along with evaluation scripts. Three different State of Charge (SoC) estimators (EKF, DUKF, Particle Filter) were explored, focusing on a challenging application example: a large-scale storage system (LSS) in the frequency containment reserve (FCR) market, simulated with a lithium iron phosphate (LFP) battery cell. The dataset encompasses application profiles, performance testing results, robustness testing results, and OCV data, providing a comprehensive basis for extending the analysis to other chemistries.

The dataset includes four folders as below. Each folder includes data (.mat files) and the script (.m file) used for the evaluation and plotting of the data.

Application: Application profile as used for the study and shown in figure 7 of the paper.

PerformanceTesting: Simulation results used for the study of performance in chapter 6.1 and shown in figure 9 of the paper.

RobustnessTesting: Simulation results used for the study of robustness in chapter 6.2 and shown in figure 10 of the paper.

OCVs: OCV data used for the analysis of potential application on other chemistries in chapter 7 and shown in table 1 / figure 11 of the paper.

2. License



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