Combined electrical-optical model to interpret experimental data on perovskite solar cells

Alison Walker[1], Kjeld Jensen[2], [1]Department of Physics, [2]Department of Mathematical Sciences, University of Bath, BA2 7AY, UK

Here, we show how experimental measurements on a perovskite solar cell can be interpreted with a combined electrical-optical model. Our model uses the open-source packages IonMonger [1] (calculates device characteristics allowing for mobile ions) and RayFlare [2] (calculates light intensity profiles allowing for interference effects).

These models require a total of around 20 input parameters for a single junction cell. We use Bayesian Parameter Estimation to predict the values of these parameters and their distributions that most closely match the experimental data. Through this approach, the importance of the processes that influence the device characteristics can be identified. Examples of these processes are the role of mobile iodide vacancies in influencing charge transport across the interface through charge accumulation/depletion at interfaces, trap assisted recombination at the interfaces, and contributions of impurities,

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2. Pearce, P. M. Journal of Open Source Software **2021**, 6, 3460
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