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Sommario/riassunto	In this work, model-based methods for the online identification of physically motivated aging parameters of battery cells are presented and applied to lithium-ion-cells. The new methods are based on fractional impedance models and, in contrast to the state of the art, are late-lumping approaches. A further contribution of this work is the extension of the theory of time-variant fractional systems by a controllability analysis and an energy-optimized control.