

This work aims to describe the method of recursive estimation of time series with conditional volatility, used mainly in finance. First, there are described the basic types of models with conditional heteroskedasticity (GARCH) and principles of state-space modeling demonstrated by means of linear models AR and ARMA. Subsequently, there are derived algorithms for recursive estimation of parameters of the GARCH model and its possible modifications including the ones for which recursive estimation formulas have not been yet derived in literature. These algorithms are tested in a simulation study, where their applicability in practice is investigated. Finally, we apply these algorithms to real high-frequency data from the stock exchange. The practical part is done using the software Mathematica 11.3. The work also serves as an overview of the current state of online modeling of financial time series.