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A study on parameter estimation in modelling using a model independent program – PEST

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The parameter estimation in mathematical models according to the observations requires a considerable effort as those parameters are used for the verification of the suitability of the models in many fields. Some of such problems are considered as inverse problems which are hardly treatable. In some models, parameters are directly estimated using the available observations. PEST (named using an acronym of Parameter ESTimation) is a program that can be used to estimate parameters for the models that are used to describe real scenario. This work presents the details on estimating spring constants using PEST for a simple mathematical model that simulate the oscillation of objects that are connected by three springs which is known as coupled harmonic oscillator. This study with the test example illustrates the validity and versatility of the PEST program which has the ability to find one or more parameter sets, if available, for the same scenario. It is important for researchers in any filed to identify possible availability of such sets of parameters, when available, for the models that are being investigated. By this work, it is communicated to the interested research community the details of the ability and suitability of PEST for parameter estimation as PEST is independent from the model investigated but it can use the model (that is being considered for estimating the parameters), the observations and initial guesses for those parameters for the estimation process.

Key words: Model, Unknown Parameter Estimation, PEST

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