

Abstract:

Compared to the rising demands on the mechanical properties, today's engineering standards are often too conservative in their prediction on a part's suitability to specific applications. A possibility to overcome this drawback lies in methods of structural health monitoring or of non-destructive testing. They allow to monitor the mechanical properties and thus to guarantee their failure-free operation. In view of this, we will discuss an article of Lechleiter and Schlasche on "Identifying Lamé parameters from time-dependent elastic wave measurements" (Inverse Probl Sci Eng, 2017, Vol. 25, No. 1, 2-26) in which the authors provide the mathematical means to successfully solve the proposed parameter identification problem. This gives rise to the idea to monitor Young's modulus, for example. The REGINN-algorithm (REGularizing INexact Newton), whose basic functionality will be discussed briefly during the talk as well, was chosen as a regularization method for this specific problem. In this seminar talk, we will focus on the analytic results of the cited article and draw some conclusions regarding its relation to a familiar identification setting in damage mechanics.