1035-34-418 **Tchavdar T Marinov*** (marinov@louisiana.edu), Department of Mathematics, University of Louisiana at Lafayette, Lafayette, LA 70504, and **Aghalaya S Vatsala** (asv5357@louisiana.edu), Department of Mathematics, University of Louisiana at Lafayette, Lafayette, LA 70504. *Restoration the Coefficient in Euler-Bernoulli Equation from Over-posed Data.* Preliminary report.

In the present work we have displayed the performance of technique called Method of Variational Imbedding for solving the inverse problem of coefficient identification in Euler-Bernoulli equation from over-posed data. The original inverse problem is replaced by the minimization problem. The Euler-Lagrange equations for minimization comprise an eight-order equation for the solution of the original equation and an explicit equation for the unknown coefficient. It is shown that the solution of the original inverse problem is among the solutions of the variational problem, i.e., the inverse problem is imbedded into a higher-order but well posed boundary value problem. The imbedding problem possesses a unique solution which means that when the imbedding functional is zero, the over-posed data is consistent and the solution of the imbedding problem coincides with the sought solution of the inverse problem. Featuring examples are elaborated numerically with different coefficients through solving the direct problem with given coefficient and preparing the over-posed boundary data for the imbedding problem. The numerical results confirm that the solution of the imbedding problem coincides with the exact solution of the original problem within the order of approximation error. (Received September 06, 2007)