

# On the Application of the Method of a Small Parameter for the Geometrically Nonlinear Theory of Non-Shallow Spherical Shells

*Bakur Gulua*

bakur.gulua@viam.sci.tsu.ge

Department of Mathematics, Iv. Javakishvili Tbilisi State University,  
2 University St., 0186 Tbilisi, Georgia

In the present paper we consider the geometrically nonlinear and non-shallow spherical shells. By means of I. Vekua method two dimensional problem is obtained [1], [4]. Using the method of the small parameter I. Vekua constructed approximate solutions of equations of shallow cylindrical and spherical shells [2], [3], which this method for non-shallow shells was generalized by T.Meunargia [5]. The same method are used for the geometrically nonlinear theory of non-shallow spherical shells.

**Acknowledgement:** The present work was supported by the Shota Rustaveli National Science Foundation within the framework of the project 12/14.

## References

- [1] I.N. Vekua, On construction of approximate solutions of equations of shallow spherical shell. *Intern. J. Solid Structures*, 5 (1969), 991-1003.
- [2] I.N. Vekua, About integration of the equilibrium equations of cylindrical shell. (Russian) *Dokl. Akad. Nauk SSSR*, 186, 4 (1969), 787-790.
- [3] I.N. Vekua, Shell Theory: General Methods of onstruction. Pitman Advanced Publishing Program, Boston-London-Melbourne 1985.
- [4] T.V. Meunargia, On one method of construction of geometrically and physically non-linear theory of non-shallow shells. *Proc. A. Razmadze Math. Inst.*, 119 (1999), 133-154.
- [5] T.V. Meunargia, On the application of the method of a small parameter in the theory of non-shallow I.N. Vekua's shells. *Proc. A. Razmadze Math. Inst.*, 141 (2006), 87-122.