1131-53-112   **Magdalena D Toda*** (`magda.toda@ttu.edu`), Dept. Mathematics and Statistics, Texas Tech University, Lubbock, TX 79409-1042, and **Fangyuan Zhang** (`fangyuan.zhang@ttu.edu`), Dept. Mathematics and Statistics, Texas Tech University, Lubbock, TX 79409-1042. *Beta Barrels as Elastic Surfaces.*

This study provides a complete characterization of beta barrels as rotational elastic surfaces, and shows that the dimensions ratio completely determines their exact shape. The elastic surface models of beta barrels, as obtained by advanced numerical integration for integrable systems, have been validated by the statistical analysis performed on protein data banks. The elastic model proves itself as a clear winner over the previous beta barrel models that were tried as best-fits over the past few decades. (Received July 08, 2017)