

Applications of Finslerian Data Structures in Physics and Biology

Abstract. The spectral N -way approach has recently provided fruitful extensions for the classic spectral theory of linear operators and, and powerful tools for Big Data and Image Processing. It relevantly enhances the statistical analysis in MRI-imaging, Special Relativity, ecology, HARDI biology, etc. In the present talk, we first provide a brief survey of results from the spectral theory of N -way arrays, and of its applications to fundamental anisotropic geometric structures, and further illustrate the the HO-SVD decomposition and the Parafac/Candecomp approximation for two models - which respectively provide powerful aids for identifying main geometric features, and consistent estimates for the original structures. We discuss as well alternative siblings of the main spectral equations within Finslerian framework.

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