EDUCATIONAL SUMMARY OF THE RESEARCH PROJECT METRIC CONTACT MANIFOLDS AND RELATED FIBRATIONS

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Geometry is an important branch of mathematics which helps to understand the shape of the physical world. In this geometric description one uses *geometric structures*. An example of a geometric structure known to the general public is a distance in euclidean space, measured by the scalar product. In a more sophisticated models, many more geometric structures arise. For example, instead of the scalar product one considers the scalar products which "smoothly" change from point to point, and instead of euclidean space one considers more general objects called "manifolds". In particular, one of such structures is a K-contact structure determined by a combination of a Riemannian metric and certain 1-form called a contact structure. These structures are used to construct special metrics called Einstein. There are several existence problems for such structures, and the project is aimed at solving them.