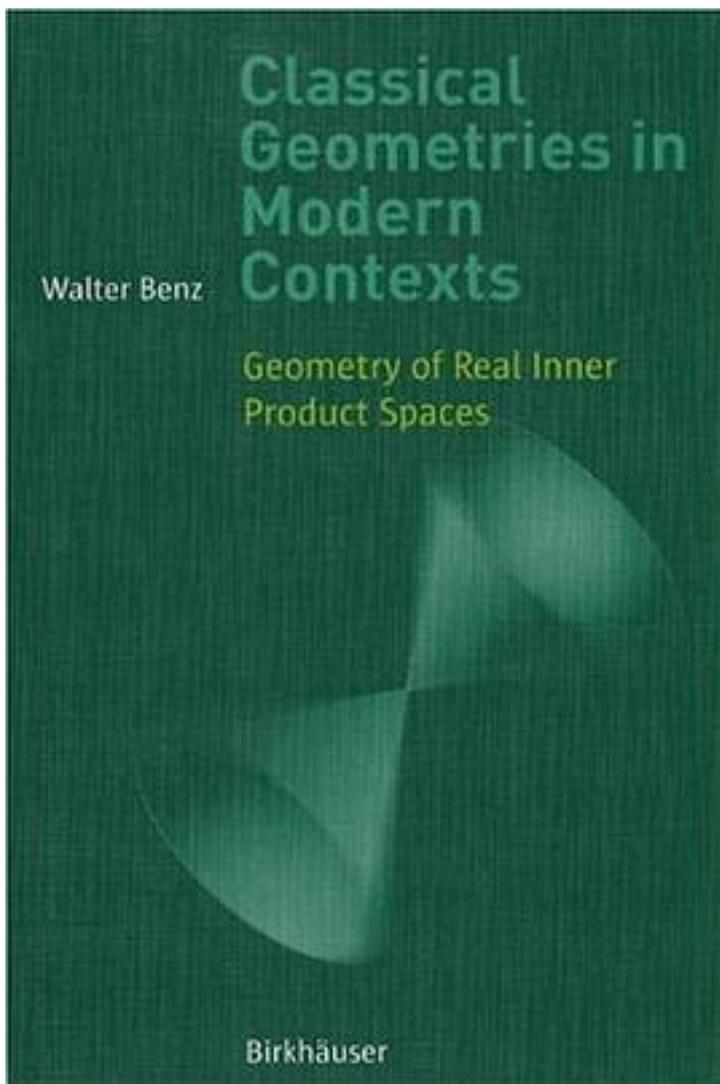# Classical Geometries in Modern Contexts

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This book is based on real inner product spaces X of arbitrary (finite or infinite) dimension greater than or equal to 2. With natural properties of (general) translations and general distances of X, euclidean and hyperbolic geometries are characterized. For these spaces X also the sphere geometries of MAbius and Lie are studied (besides euclidean and hyperbolic geometry), as well as geometries where Lorentz transformations play the key role. The geometrical notions of this book are based on general spaces X as described. This implies that also mathematicians who have not so far been especially interested in geometry may study and understand great ideas of classical geometries in modern and general contexts. Proofs of newer theorems, characterizing isometries and Lorentz transformations under mild hypotheses are included, like for instance infinite dimensional versions of famous theorems of A.D. Alexandrov on Lorentz transformations. A real benefit is the dimension-free approach to important geometrical theories. Only prerequisites are basic linear algebra and basic 2- and 3-dimensional real geometry.

作者介绍:

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