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ROTATIONS IN $\mathbb{R}^3$ AND THEIR PARAMETRIC REPRESENTATIONS

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Abstract. The present paper is a review of the research in the area of representations of the rotational motions in the three-dimensional Euclidian space. The study starts with the topics of Euler angles and Rodrigues' formula, and passes through the investigations in quaternion, spinor and vector kinematics. The authors present the interconnections between the different parameterizations of SO(3) group and stress on their merits and negative characteristics, and applications. A special attention is paid on the vector-parameterization of the rotation group, and how its nice properties are used in different mechanical applications.

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