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Elasticity Boundary-Value Problems for Straight Wedge Disclinations. A Review on Methods and Results

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Abstract. The review presents up-to-date information on the analytical solutions of the isotropic elasticity boundary-value problems for straight wedge disclinations. The considered plane elasticity problems include those for disclinations in uniform or two-phase cylinders, at a free surface of a half-space, and in a plate of finite thickness. Three-dimensional problems under analysis deal with wedge disclinations in a bulk sphere or spherical layer or with the defects with the lines being normal to a free surface of a half-space or to surfaces of the plate. Applications of the given solutions to explanation and prediction of various structure dependent properties of solids are briefly discussed.

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