The present paper is a continuation of the authors’ previous work concerning projective geometry and Riemann’s mapping problem [S. S. Chern and S. Ji, Math. Ann. 302, No. 3, 581-600 (1995; Zbl 0843.32013)]. The main result is the following theorem (a generalization of the Riemann mapping theorem): If a bounded simply connected domain $\Omega$ in $\mathbb{C}^n$ has connected, smooth, (locally) spherical boundary, then it is biholomorphic to the ball. The boundary is called (locally) spherical if it is locally CR-equivalent to a portion of the unit sphere.

The authors point out that when the boundary of $\Omega$ is simply connected, the result also follows from earlier work of Pinčuk [S. Pinčuk, Math. USSR Sb. 27(1975), 375-392 (1977); translation from Mat. Sb, n. Ser. 98(140), 416-435 (1975; Zbl 0366.32010)].

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**MSC:**

- 32H02 Holomorphic mappings, (holomorphic) embeddings and related questions in several complex variables
- 53C56 Other complex differential geometry

**Keywords:**

Segre family; projective structure bundle; connections; Riemann mapping theorem

**Full Text:** DOI