

Kirchgraber, Urs**How Poincaré, Hadamard, and Perron contributed to the theory of invariant manifolds. (Als Poincaré, Hadamard and Perron die invarianten Mannigfaltigkeiten entdeckten.)** (German)[Zbl 0912.34038](#)[Math. Semesterber.](#) 44, No. 2, 153-171 (1997).

The author explains the geometric and analytic approaches of Poincaré, Hadamard and Perron in studying autonomous differential systems by means of the discrete dynamical system $(*) \bar{u} = F(u, v), \bar{v} = G(u, v)$ having at $u = v = 0 \in \mathbb{R}$ a hyperbolic fixed point. He introduces the concept of stable and unstable invariant manifolds of $(*)$ through the origin, and considers the (different) method of Hadamard and Perron to construct these manifolds. This is a well-written introduction into the geometric ideas of the qualitative theory of dynamical systems. Unfortunately, the author did not mention the contribution of A. M. Lyapunov to invariant manifolds.

Reviewer: [K.R.Schneider \(Berlin\)](#)**MSC:**[34C45](#) Invariant manifolds for ordinary differential equations[01A72](#) Schools of mathematics[34-03](#) History of ordinary differential equations**Keywords:**[invariant manifolds](#); [autonomous differential systems](#); [dynamical systems](#)**Full Text:** [DOI](#)