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Nota di contenuto	1 Introduction -- 2 Nonabelian Jacobian J(X; L; d): main properties -- 3 Some properties of the filtration H -- 4 The sheaf of Lie algebras G -- 5 Period maps and Torelli problems -- 6 sl2-structures on F -- 7 sl2-structures on G -- 8 Involution on G -- 9 Stratification of T -- 10 Configurations and theirs equations -- 11 Representation theoretic constructions -- 12 J(X; L; d) and the Langlands Duality.
Sommario/riassunto	The Jacobian of a smooth projective curve is undoubtedly one of the most remarkable and beautiful objects in algebraic geometry. This work is an attempt to develop an analogous theory for smooth projective surfaces - a theory of the nonabelian Jacobian of smooth projective surfaces. Just like its classical counterpart, our nonabelian Jacobian relates to vector bundles (of rank 2) on a surface as well as its Hilbert scheme of points. But it also comes equipped with the variation of Hodge-like structures, which produces a sheaf of reductive Lie algebras naturally attached to our Jacobian. This constitutes a nonabelian analogue of the (abelian) Lie algebra structure of the classical Jacobian. This feature naturally relates geometry of surfaces with the representation theory of reductive Lie algebras/groups. This

work’s main focus is on providing an in-depth study of various aspects of this relation. It presents a substantial body of evidence that the sheaf of Lie algebras on the nonabelian Jacobian is an efficient tool for using the representation theory to systematically address various algebro-geometric problems. It also shows how to construct new invariants of representation theoretic origin on smooth projective surfaces.