

**Ciliberto, Ciro; Mendes Lopes, Margarida; Roulleau, Xavier**  
**On Schoen surfaces.** (English) [Zbl 1315.14053](#)  
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Schoen surfaces are irregular surfaces of general type with  $p_g = 5$ ,  $\chi = 2$ ,  $K^2 = 16$  first constructed by *C. Schoen* in [*Int. J. Math.* 18, No. 5, 585–612 (2007; [Zbl 1118.14042](#))]. They are Lagrangian surfaces (i.e., Lagrangian subvarieties of their Albanese variety) and satisfy  $p_g = 2q - 3$ , which is the minimum possible  $p_g$  with respect to  $q$  for surfaces without irrational pencil of genus  $\geq 2$ .

The present article first reviews Schoen's construction and some interesting properties of the resulting Schoen surfaces. In the second part of the article, the authors give a new approach to constructing Schoen surfaces and use this approach to obtain more information about a general Schoen surface  $S$ . In particular, they prove that the canonical map realizes  $S$  as a double cover over a canonical surface with 40 even nodes, which is a complete intersection of a quadric and a quartic hypersurface in  $\mathbb{P}^4$ .

Reviewer: [Florian Schrack \(Bayreuth\)](#)

**MSC:**

- [14J29](#) Surfaces of general type
- [32G05](#) Deformations of complex structures
- [14D06](#) Fibrations, degenerations in algebraic geometry
- [14J10](#) Families, moduli, classification: algebraic theory

Cited in **5** Documents

**Keywords:**

irregular surfaces; Lagrangian surfaces; deformations of surfaces; canonical maps

**Full Text:** [DOI](#) [arXiv](#)