

## Rita Pardini

### Curves on irregular surfaces and Brill-Noether theory

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The irregularity of a smooth complex projective surface is the number  $q$  of independent global 1-forms of  $S$ ; there exist a complex torus of dimension  $q$ , the Albanese variety  $\text{Alb}(S)$ , and a map  $S \rightarrow \text{Alb}(S)$ , the Albanese map, through which any map  $S \rightarrow T$ ,  $T$  a complex torus, factorizes. The Albanese dimension of a surface is the dimension of the image of the Albanese map.

Little is known on surfaces of general type with Albanese dimension 2. I will propose an approach to the study of these surfaces via the analysis of the curves of small genus on them. This leads naturally to considering the Brill-Noether locus  $W(C)$  of a curve  $C$  of  $S$ , namely the set of line bundles  $P$  in  $\text{Pic}^0(S)$  such that the divisor  $C+P$  is effective. I will give a structure result for  $W(C)$  and show that it gives numerical restrictions on the curves of small genus on  $S$ . This is joint work with Margarida Mendes Lopes and Gian Pietro Pirola.

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