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Counting Rational and Algebraic Points on Real and p-adic Tame Sets

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I will present the celebrated Pila-Wilkie's theorem bounding the number of algebraic points of given degree and height, in different contexts. In the real and the non-archimedean context (mainly the p-adic case). As a motivation, I will introduce the subject by giving an overview of problems of unlikely intersection, such as the Andr-Oort conjecture or more generally the Zilber-Pink conjecture, and explain where upper bounds for algebraic points appear in this context. Then I will explain Pila-Wilkie's in the real case, starting from the very simple case of curves, and I will particularly put the stress on zeroes lemmas that plays a crucial role in the search of better bounds following Pila-Bombieri's approach. Finally I will explain the p-adic case, where new issues have to be overcome; the main problem consisting here in obtaining a p-adic version of the Yomdin-Gromov covering result.