Fano varieties with large second Betti number

The subject of the talk are Fano manifolds, that is: smooth complex projective varieties whose anticanonical divisor is ample. We will first review some classical results on the geometry of a Fano manifold $X$. Then we will explain a result which relates the second Betti number of $X$ to the second Betti number of any prime divisor $D$ in $X$. More precisely, if $r: H^2(X, \mathbb{R}) \to H^2(D, \mathbb{R})$ is the natural restriction map, then the kernel of $r$ has dimension at most 8. Moreover, as soon as there is a prime divisor $D$ with dim ker $r \geq 2$, this yields some geometrical properties of $X$. 