Abstract: We study the asymptotic behavior of some functionals of excursion sets of real Gaussian random fields. We develop a method to obtain central limit theorems (CLTs) for such functionals, based on their representation into the Wiener Chaos. We illustrate this approach considering the number of crossings of a level of a Gaussian process and the length of a level curve of a Gaussian field X_t with $t \in \mathbb{R}^2$. Then we extend it to obtain a CLT the Lipschitz-Killing curvatures of the excursion sets of a Gaussian field X_t with $t \in \mathbb{R}^d$.