In this talk we will discuss from a probabilistic point of view the heat content problem of a smoothly bounded, non-characteristic domain in the first Heisenberg group. This probabilistic approach can be systematically extended to other sub-Riemannian 3-manifolds, as soon as the Steiner’s formula (which describes the volume expansion of a tubular neighborhood of the boundary of the domain) is available. We will also briefly discuss the ongoing works in the cases of 3-sphere SU(2) and the anti-de Sitter space AdS$^3$. (Received February 04, 2019)