

# Automorphism group object of the first-order infinitesimals

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In this talk we present some new findings concerning the internal automorphisms group of the first-order infinitesimals, within one model of the synthetic differential geometry (SDG), namely, the smooth topos  $\mathbf{Sets}^{L^{op}}$ , where  $L$  is the opposite of the category of all finitely generated  $C^\infty$ -rings and  $C^\infty$ -homomorphisms between them. We establish an explicit description of this object in terms of the object of units of the smooth real line, and show that it has two connected components.