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研 究 主 論 文 抄 録

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論文題目　　　Alexandrov spaces satisfying the infinitesimal Bishop-Gromov condition
　　　　　　　（無限小ビショップ・グロモフ条件を満たすアレキサンドロフ空間）

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主論文要旨

In this doctoral thesis we study some analytical properties of Alexandrov spaces satisfying the so-called infinitesimal Bishop-Gromov condition. This condition was recently introduced by Kuwae and Shioya in the attempt to generalize the Ricci lower bound condition on Alexandrov spaces that do not have in general a differentiable structure. A simple but crucial point of such spaces is that they satisfy a Bishop-Gromov type volume property. This property is sufficient to perform geometrical analysis on such spaces and extend some results which are well known for Riemannian manifolds. In particular, we prove for Alexandrov spaces satisfying the infinitesimal Bishop-Gromov condition Poincaré and Sobolev type inequalities and we derive the parabolic Harnack inequality. As applications of such inequalities we prove two Liouville type theorems and some estimates of the heat kernel. Moreover, we discuss the issue of the weak convergence of the laws of stochastic processes associated to the corresponding canonical Dirichlet forms.