Filtration Methods in Diophantine Geometry and Nevanlinna Theory

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Abstract

In 1994 Faltings and Wüstholz introduced a new geometric method in the study of Diophantine approximation, called the filtration method, which involved working with "many" sections of a line bundle and producing many linear combinations of them vanishing along appropriate divisors. This was further developed by Evertse and Ferretti. Independently, Corvaja and Zannier also worked with filtrations of the same kind, which was further refined and developed by Levin and Autissier, etc. Recently, Ru and Vojta formulated a general version of the celebrated Schmidt's Subspace Theorem that unifying many known results with filtration methods. We will introduce these developments and state some applications of Ru-Vojta's theorem in the study of integral points and gcd theorem. We will also mention some corresponding results in Nevanlinna theory. This talk includes joint works with Erwan Rousseau and Amos Turchet and a joint work with Yu Yasufuku.