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	Nota di contenuto	1. Notes on Weyl Algebras and D-modules -- 2. Inverse Systems of Local Rings -- 3. Lectures on the Representation Type of a Projective Variety -- 4. Simplicial Toric Varieties which are set-theoretic Complete Intersections.
	Sommario/riassunto	This book presents four lectures on recent research in commutative algebra and its applications to algebraic geometry. Aimed at researchers and graduate students with an advanced background in algebra, these lectures were given during the Commutative Algebra program held at the Vietnam Institute of Advanced Study in Mathematics in the winter semester 2013 -2014. The first lecture is on Weyl algebras (certain rings of differential operators) and their D-

modules, relating non-commutative and commutative algebra to algebraic geometry and analysis in a very appealing way. The second lecture concerns local systems, their homological origin, and applications to the classification of Artinian Gorenstein rings and the computation of their invariants. The third lecture is on the representation type of projective varieties and the classification of arithmetically Cohen -Macaulay bundles and Ulrich bundles. Related topics such as moduli spaces of sheaves, liaison theory, minimal resolutions, and Hilbert schemes of points are also covered. The last lecture addresses a classical problem: how many equations are needed to define an algebraic variety set-theoretically? It systematically covers (and improves) recent results for the case of toric varieties.