Some ring-theoretic properties of a local log-regular ring

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Toric varieties (toric rings) are algebraic varieties (commutative rings) formulated by combinatorial information and have played important roles in algebraic geometry and commutative ring theory. On the other hand, establishing toric theory without bases is much important for studying arithmetic geometry and commutative ring theory in mixed characteristic. To establish the theory, Kazuya Kato introduced local log-regular rings. A local log-regular ring is a commutative ring with an additional structure defined by a homomorphism of monoids. This class of rings has the structure theorem such as Cohen's structure theorem. This theorem suggests that this class has similarities to the class of toric rings. From this point of view, we obtain some ring-theoretic properties (the structure of canonical modules and some finiteness of the divisor class group) of a local log-regular ring. In this talk, we introduce these results.

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