Title: Infinite directed unions of local quadratic transforms.

Abstract: Let \((R, \mathfrak{m})\) be a regular local ring of dimension \(d \geq 2\) birationally dominated by a valuation ring \((V, \mathfrak{n})\). Then there is a unique sequence of local quadratic transforms \(\{(R_n, m_n)\}_{n \geq 0}\) along \(V\). Abhyankar proved that if \(d = 2\) this sequence is finite and reaches \(V\). However in dimension bigger than 2 this result is not true anymore. We focus on the situation where \(\{(R_n, m_n)\}_{n \geq 0}\) is infinite and we study the structure of the integrally closed local domain \(S = \bigcup_{n \geq 0} R_n\).