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Punctured hexagons and almost complete intersections

We establish a connection between Artinian monomial almost complete intersections in three variables and hexagons with triangular punctures. It turns out that the prime factors of the number of certain tilings of the punctured hexagon are exactly the field characteristics in which the algebra fails to have the weak Lefschetz property. We use this to prove several new cases, with combinatorial explanations, of a conjecture by Migliore, Miró-Roig, and Nagel pertaining to characteristic zero.