Ruled Exceptional Surfaces and the Poles of Motivic Zeta Functions

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Abstract. In this paper we study ruled surfaces which appear as exceptional surface in a succession of blowing-ups. In particular we prove that the \( e \)-invariant of such a ruled exceptional surface \( E \) is strictly positive whenever its intersection with the other exceptional surfaces does not contain a fiber (of \( E \)). This fact immediately enables us to resolve an open problem concerning an intersection configuration on such a ruled exceptional surface consisting of three nonintersecting sections. In the second part of the paper we apply the non-vanishing of \( e \) to the study of the poles of the well-known topological, Hodge and motivic zeta functions.