On four-manifolds with genus-1 simplified broken Lefschetz fibrations

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In 2005, Auroux, Donaldson and Katzarkov introduced broken Lefschetz fibrations in order to understand near-symplectic structures via fibration structures. Simplified broken Lefschetz fibrations are broken Lefschetz fibrations with several conditions on topology and configuration of singularities. Although negative definite four-manifolds cannot admit near-symplectic structures, it turns out that every closed, oriented, connected four-manifold has a simplified broken Lefschetz fibration. In this talk, we discuss the classification problem of four-manifolds which admit genus-1 simplified broken Lefschetz fibrations.