

# Vanishing cycles and homotopies of wrinkled fibrations

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**Abstract.** Wrinkled fibrations are fibration structures on four-manifolds, which have been studied recently for the purpose of understanding some invariants of four-manifolds. In this talk, we will explain how vanishing cycles of wrinkled fibrations are changed by several homotopies. As an application, we also give new examples of surface diagrams of four-manifolds, which are combinatorial descriptions of four-manifolds introduced by Williams. Part of the results in this talk is joint-work with Stefan Behrens (The Max Plank Institute for Mathematics).