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Positive Einstein metrics on infinitely many 4-manifolds

We construct Einstein metrics with positive scalar curvature on two infinite families of 4-manifolds. Via Wick rotation, we obtain static axisymmetric Lorentzian spacetimes with positive cosmological constant and arbitrarily many horizons of equal surface gravity. As the topology increases, the metrics collapse to an explicit 2-disk while bubbling off periodic gravitational instantons with Kasner asymptotics, one of which is new.