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Rotating Bowen-York initial data with a positive cosmological constant

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I investigate rotating Bowen-York-type initial data for Einstein equations with a positive cosmological constant. They are obtained using the so-called conformal method. From the technical point of view, its most important part amounts to solving a corresponding Lichnerowicz equation. The first analysis of this equation was recently published by Bizoń, Pletka and Simon. Here I focus on additional branches of its solutions, bifurcating from the already known ones. I will briefly discuss the numerical method used to find such solutions, and also comment on the completeness of the obtained bifurcation diagram.

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