

# Black hole formation with a conformally coupled scalar field in three spacetime dimensions

CRISTIÁN MARTÍNEZ

*Centro de Estudios Científicos (CECs), Av. Arturo Prat 514, Valdivia, Chile*  
martinez@cecs.cl

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## ABSTRACT

We study the black hole formation in three spacetime dimensions by considering a self-interacting scalar field conformally coupled to gravity in presence of a negative cosmological constant. We find two classes of time-dependent *exact* solutions. The first class contains configurations that evolve to a known static hairy black hole [1, 2], and also includes the particular solution recently obtained in [3]. The second type is characterized by solutions with a vanishing energy-momentum tensor, which represent a stealth scalar field overflying a BTZ black hole [4].

## References

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