University of Groningen

Zwei-Dreibein Gravity

Bergshoeff, Eric A.; de Haan, Sjoerd; Hohm, Olaf; Merbis, Wout; Townsend, Paul K.

Published in:
Physical Review Letters

DOI:
[10.1103/PhysRevLett.111.111102](https://doi.org/10.1103/PhysRevLett.111.111102)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2013

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Bergshoeff, E. A., de Haan, S., Hohm, O., Merbis, W., & Townsend, P. K. (2013). Zwei-Dreibein Gravity: A Two-Frame-Field Model of 3D Massive Gravity. *Physical Review Letters*, 111(11), 111102-1-111102-5. [111102]. <https://doi.org/10.1103/PhysRevLett.111.111102>

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

Erratum: Zwei-Dreibein Gravity: A Two-Frame-Field Model of 3D Massive Gravity [Phys. Rev. Lett. 111, 111102 (2013)]

Eric A. Bergshoeff, Sjoerd de Haan, Olaf Hohm, Wout Merbis, and Paul K. Townsend

(Received 25 October 2013; published 19 December 2013)

DOI: [10.1103/PhysRevLett.111.259902](https://doi.org/10.1103/PhysRevLett.111.259902)

PACS numbers: 04.50.Kd, 04.60.-m, 99.10.Cd

It was recently shown [1] that the “zwei-dreibein gravity” (ZDG) model of massive gravity presented in our Letter has, for generic parameters, an additional local degree of freedom in some backgrounds. The derivation, briefly presented in our Letter, of the secondary Hamiltonian constraints that exclude this possibility is not valid for generic parameters given the stated assumptions (invertibility of both dreibeine). To correct for this it is necessary to restrict the parameters such that $\beta_1\beta_2 = 0$; in the case that $\beta_1 = 0$, the required secondary constraints can be derived assuming only invertibility of e_2 (the second dreibein). An explicit restricted ZDG model of this type that satisfies all of the (bulk and boundary) unitarity conditions found in our Letter is

$$\begin{aligned}\beta_1 &= 0, & \beta_2 &= 1; & M_1 &= M_2; \\ \alpha_1 &= \frac{1}{2} + \zeta, & \alpha_2 &= 1 + \zeta & (\zeta > 0).\end{aligned}\tag{1}$$

In this case the quadratic equation for γ [Eq. (8) of our Letter] has the solution $\gamma = 1$ and it yields an AdS vacuum with radius of curvature proportional to $\sqrt{\zeta}$.

We thank M. Bañados, C. Deffayet, and M. Pino for sending us an early version of their paper and for important discussions.

M. Bañados, C. Deffayet, and M. Pino, [Phys. Rev. D 88, 124016 \(2013\)](#).