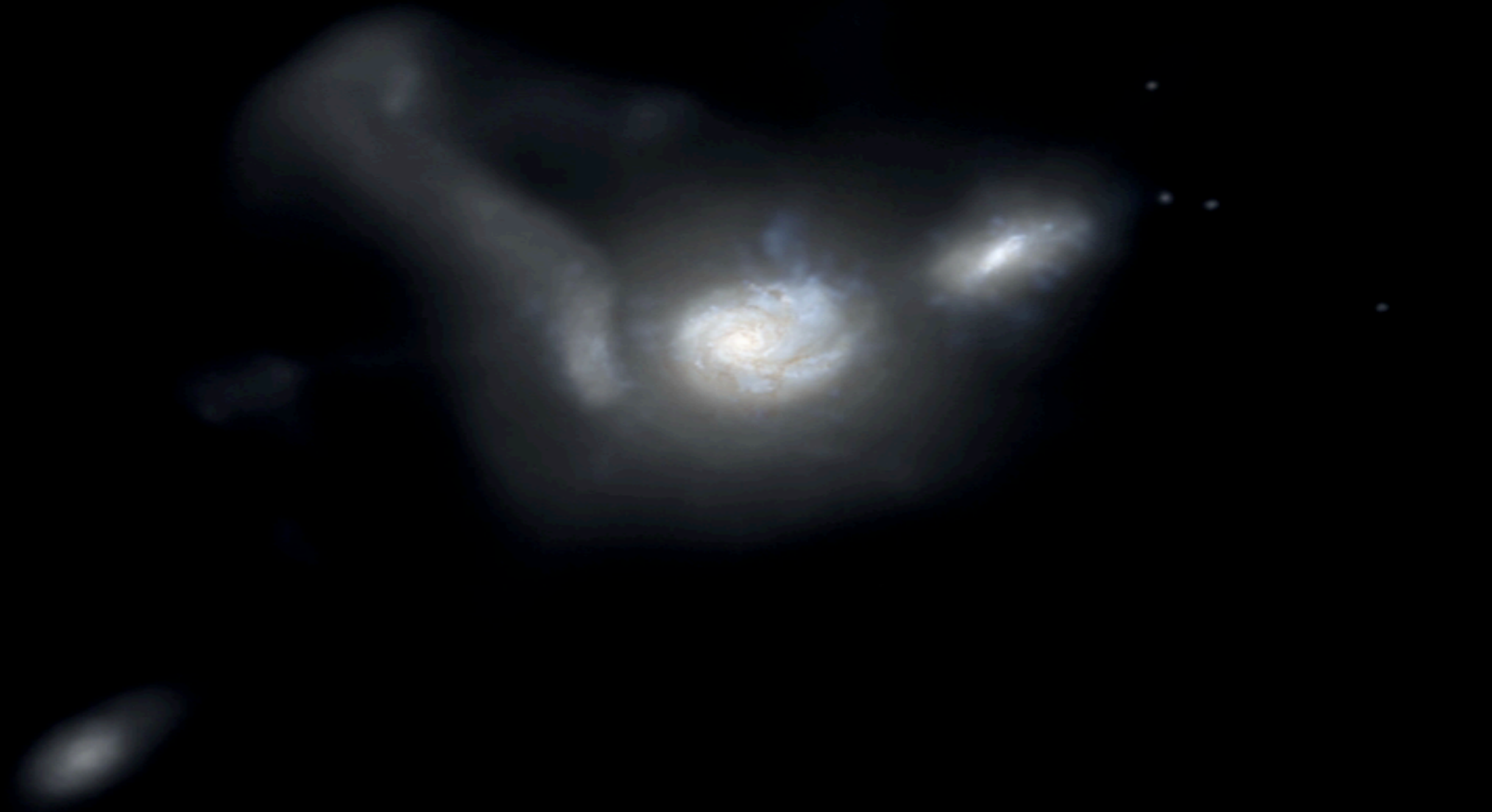
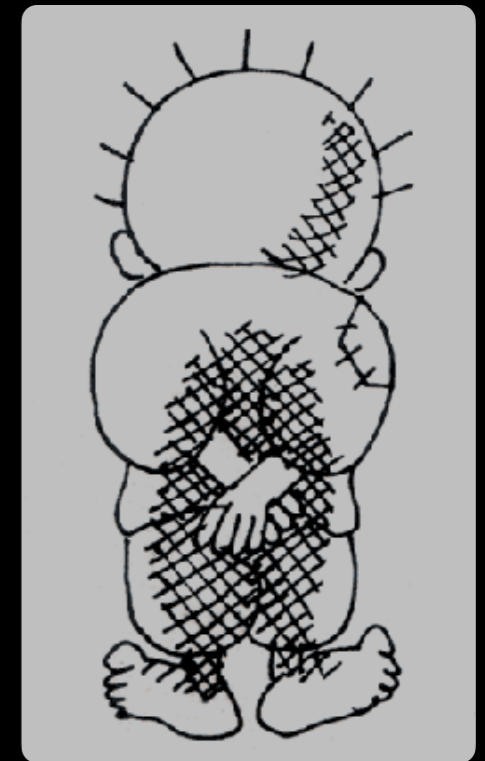


The intriguing lives of galaxies lacking dark matter



Chumash People





A galaxy lacking dark matter

Pieter van Dokkum¹, Shany Danieli¹, Yotam Cohen¹, Allison Merritt^{1,2}, Aaron J. Romanowsky^{3,4}, Roberto Abraham⁵, Jean Brodie⁴, Charlie Conroy⁶, Deborah Lokhorst⁵, Lamiya Mowla¹, Ewan O'Sullivan⁶ & Jielai Zhang⁵

Disclaimer: I'm not a co-author of that paper!



NGC 1052 DF2

DF2



NGC 1052 DF4

DF4

Theoretical scenario #1

Quasar induced formation

Mon. Not. R. Astron. Soc. **298**, 577–582 (1998)

Quasar outflows and the formation of dwarf galaxies

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AGN Feedback in FIRE

JOURNAL ARTICLE

Local positive feedback in the overall negative: the impact of quasar winds on star formation in the FIRE cosmological simulations

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Jonathan Mercedes-Feliz ✉, Daniel Anglés-Alcázar, Christopher C Hayward, Rachel K Cochrane, Bryan A Terrazas, Sarah Wellons, Alexander J Richings, Claude-André Faucher-Giguère, Jorge Moreno, Kung Yi Su ... [Show more](#)

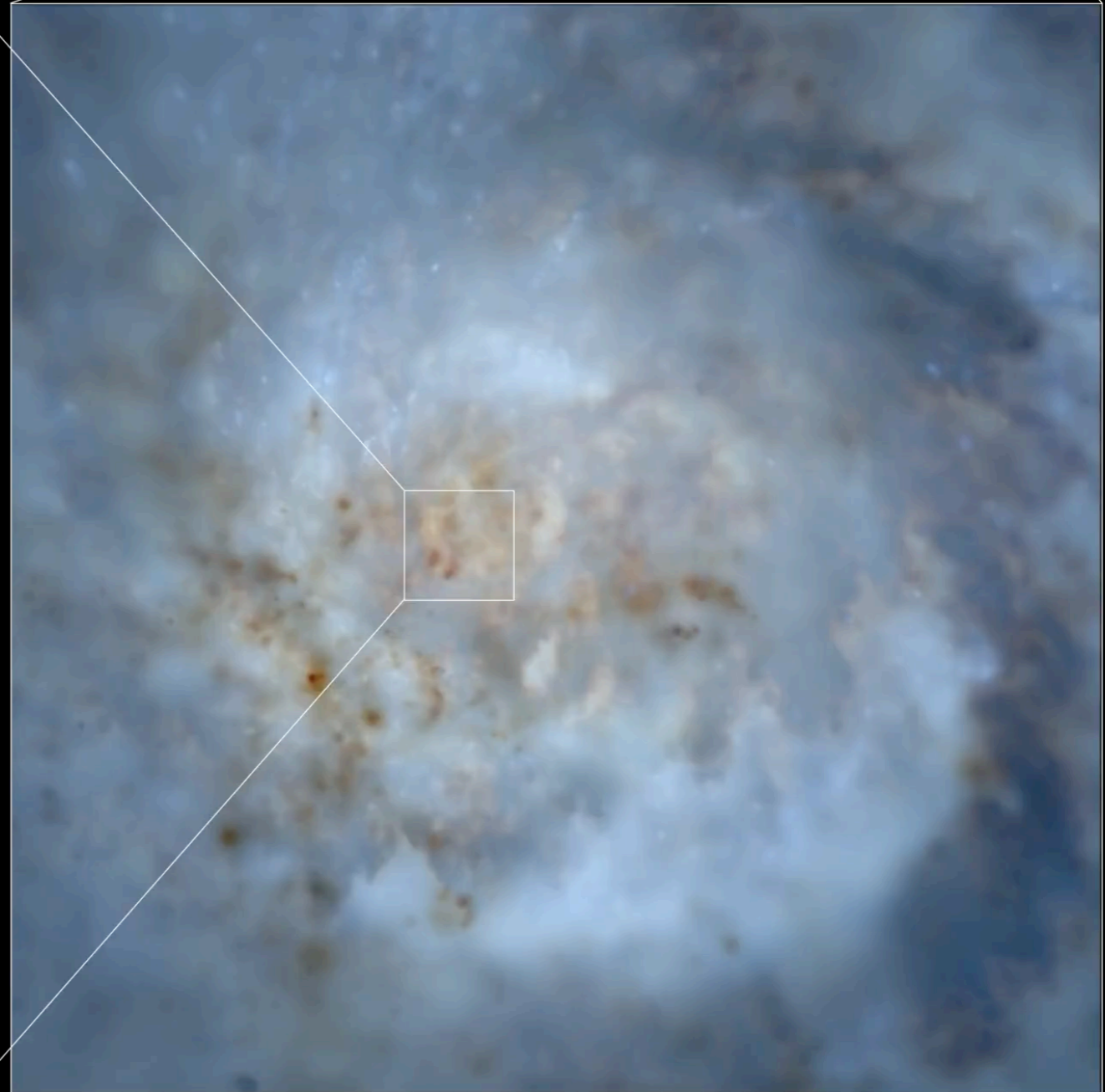
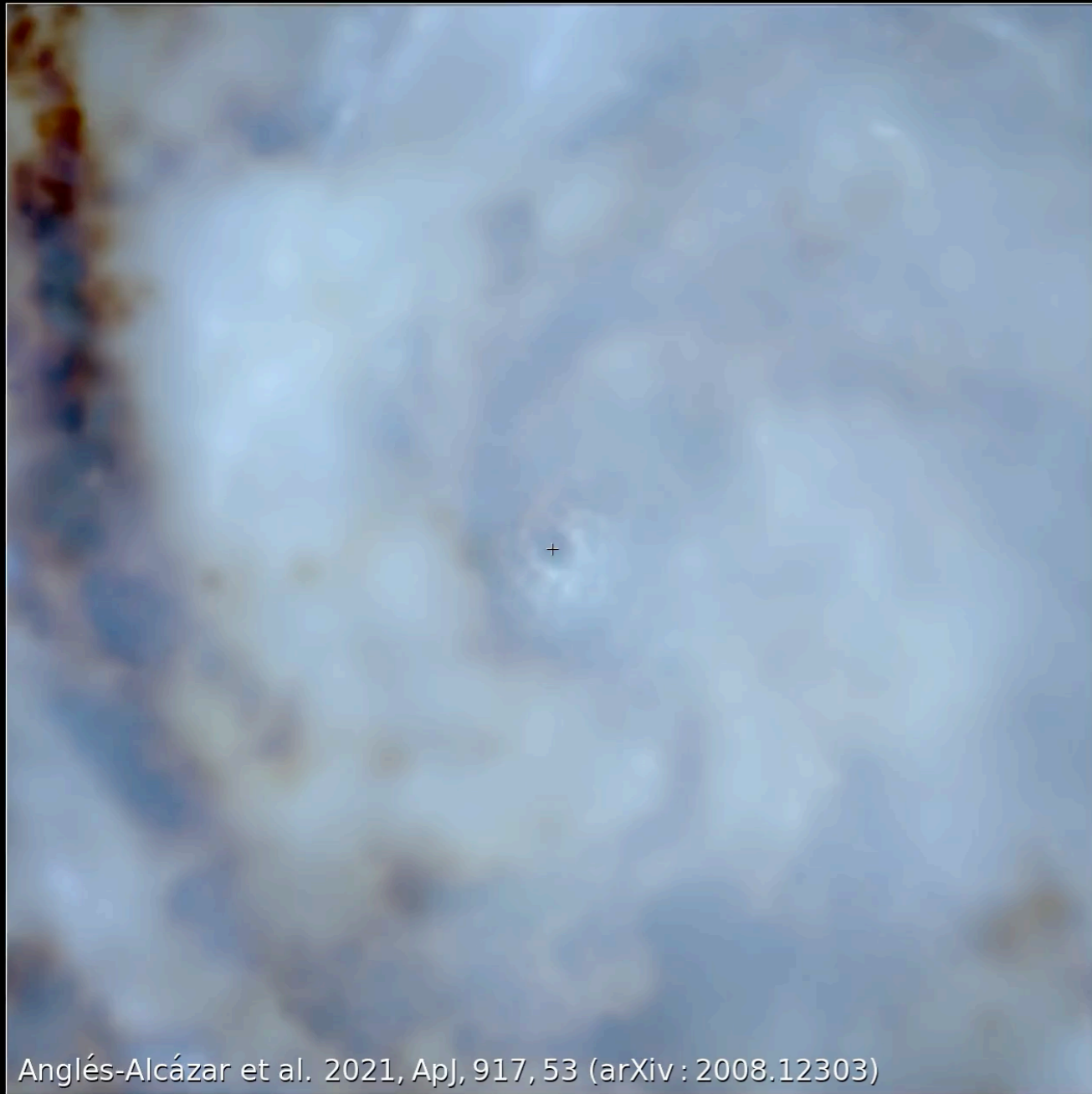
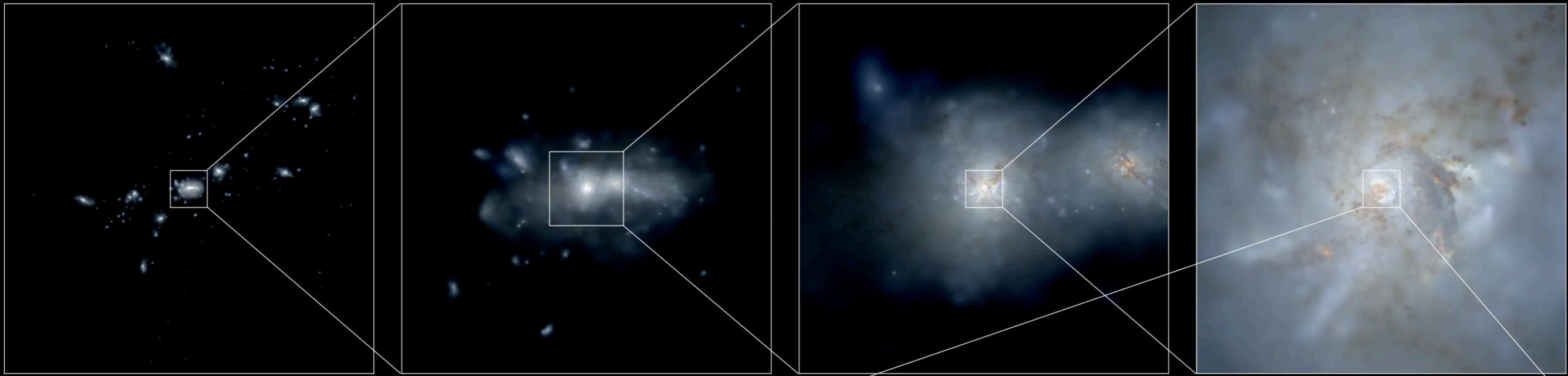
Monthly Notices of the Royal Astronomical Society, Volume 524, Issue 3, September 2023, Pages 3446–3463,
<https://doi.org/10.1093/mnras/stad2079>

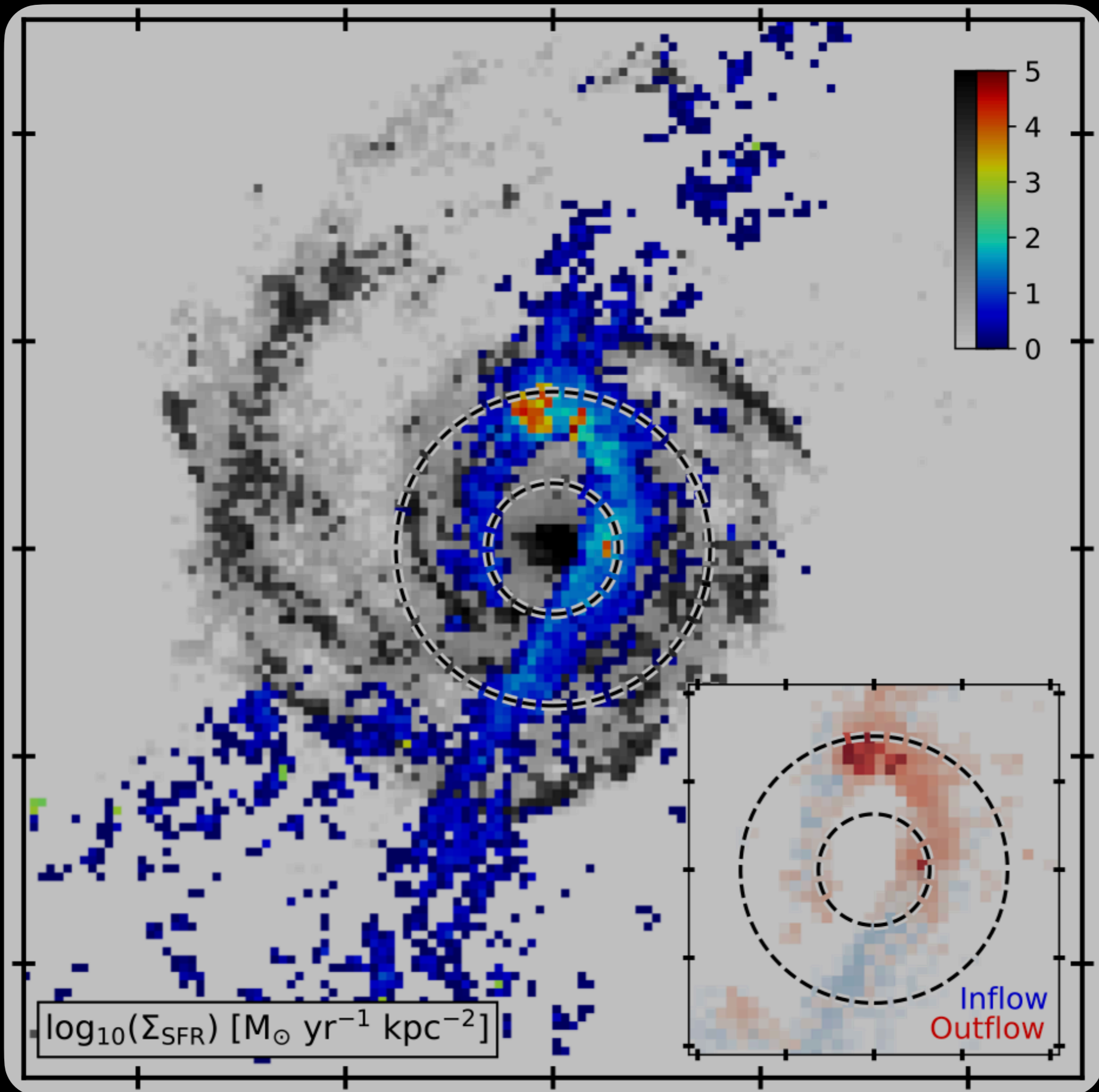
Dense stellar clump formation driven by strong quasar winds in the FIRE cosmological hydrodynamic simulations

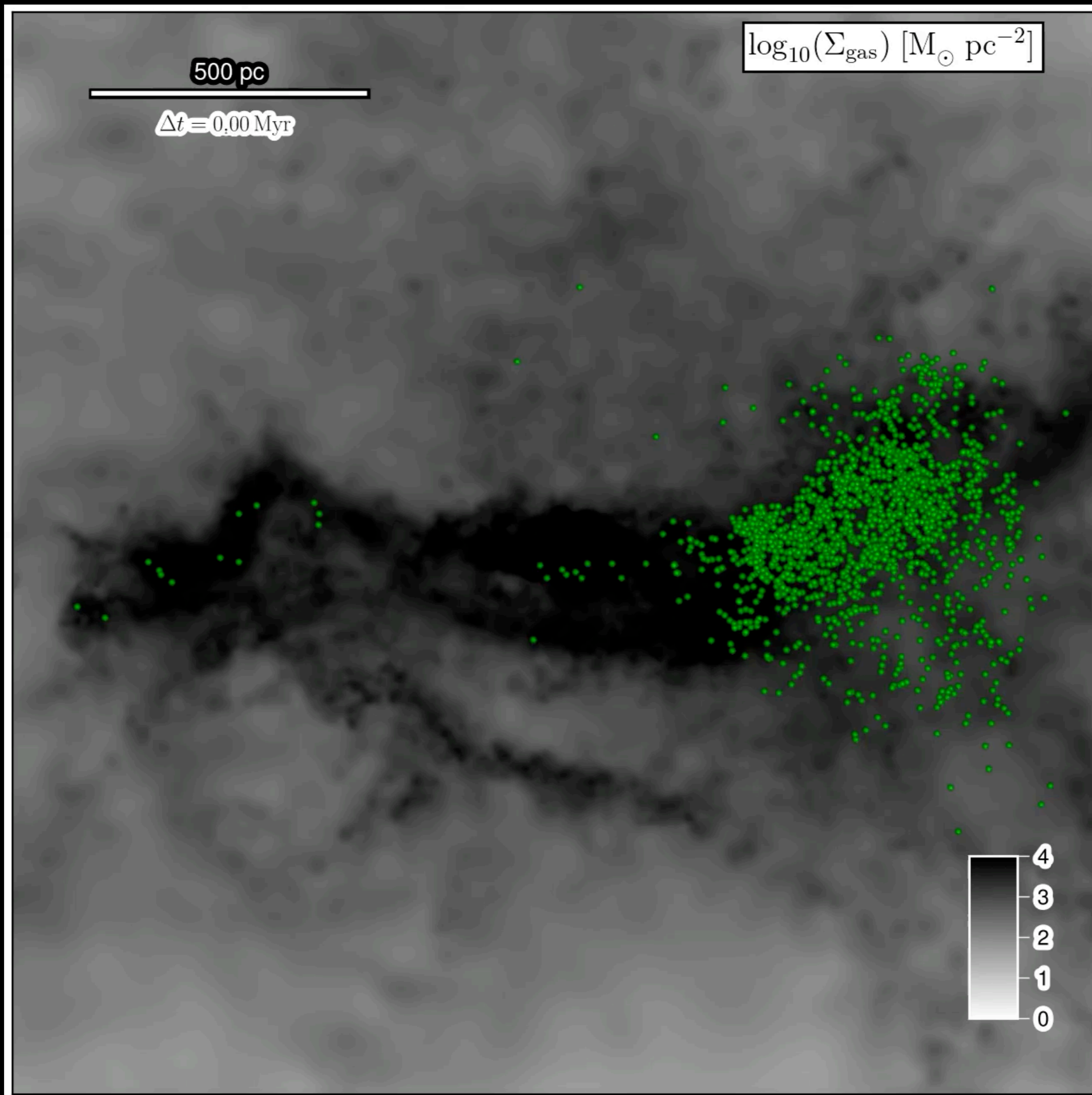
Jonathan Mercedes-Feliz,^{1*} Daniel Anglés-Alcázar,^{1,2} Boon Kiat Oh,¹ Christopher C. Hayward,² Rachel K. Cochrane,^{3,2} Alexander J. Richings,^{4,5} Claude-André Faucher-Giguère,⁶ Sarah Wellons,⁷ Bryan A. Terrazas,⁸ Jorge Moreno,⁹ Kung Yi Su,^{10,3,2} and Philip F. Hopkins¹¹



Jonathan Mercedes-Feliz







Theoretical scenario #2

Mini bullet “cluster” collisions

A trail of dark-matter-free galaxies from a bullet-dwarf collision

<https://doi.org/10.1038/s41586-022-04665-6>

Received: 29 November 2021

Accepted: 21 March 2022

Pieter van Dokkum^{1✉}, Zili Shen¹, Michael A. Keim¹, Sebastian Trujillo-Gomez², Shany Danieli³, Dhruba Dutta Chowdhury¹, Roberto Abraham⁴, Charlie Conroy⁵, J. M. Diederik Kruijssen², Daisuke Nagai⁶ & Aaron Romanowsky^{7,8}

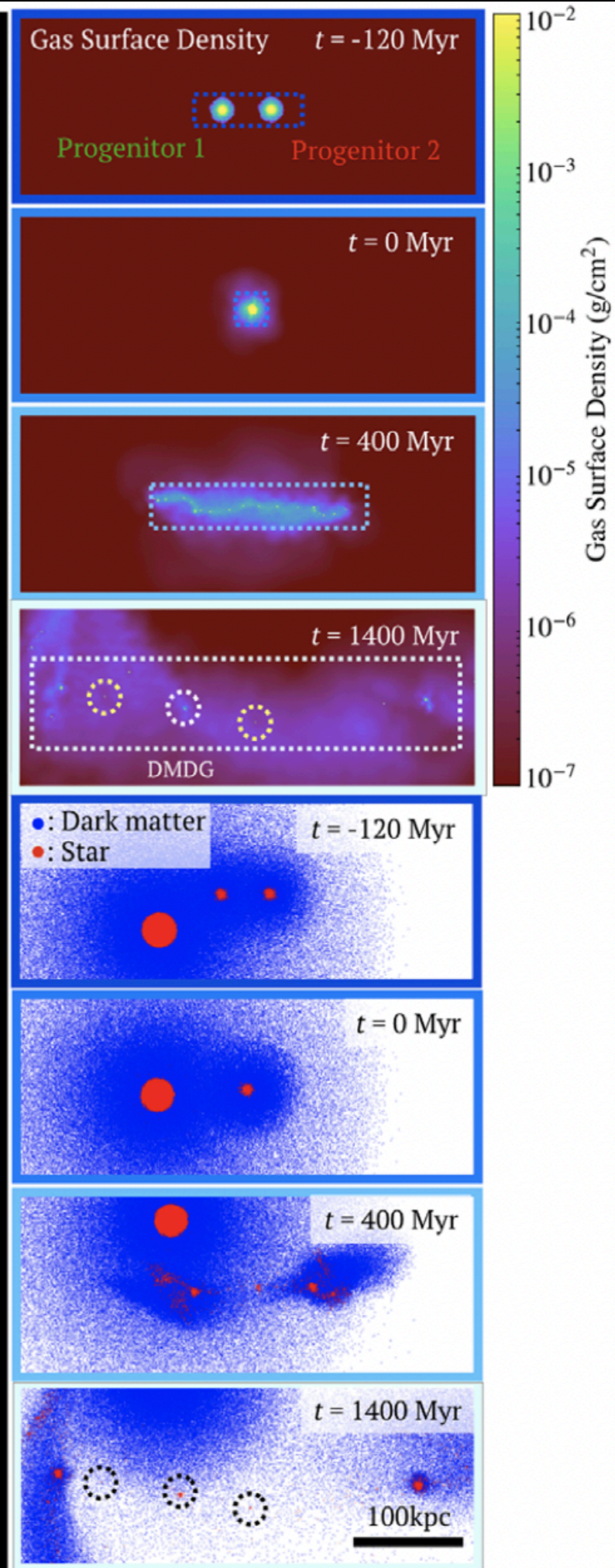
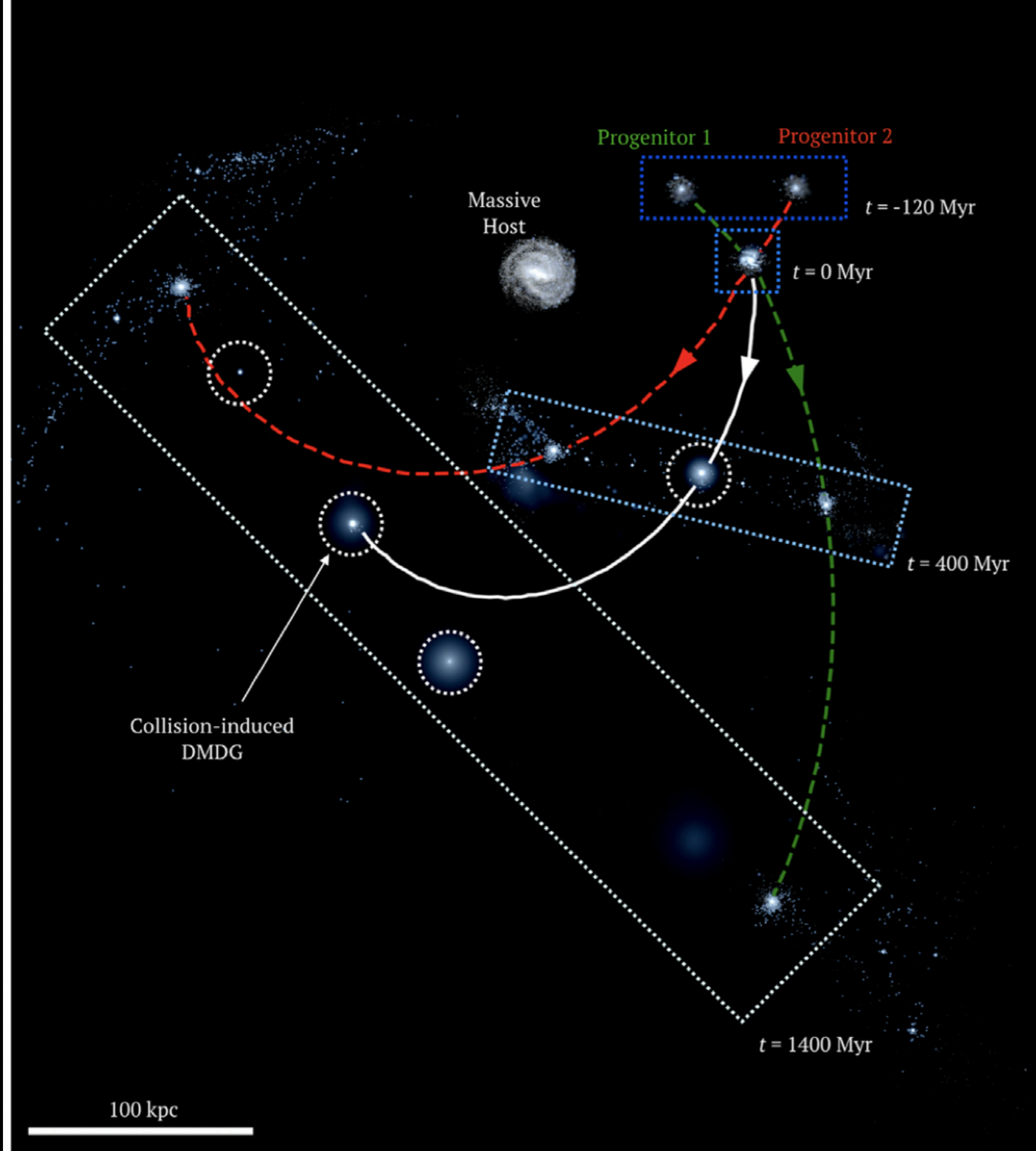
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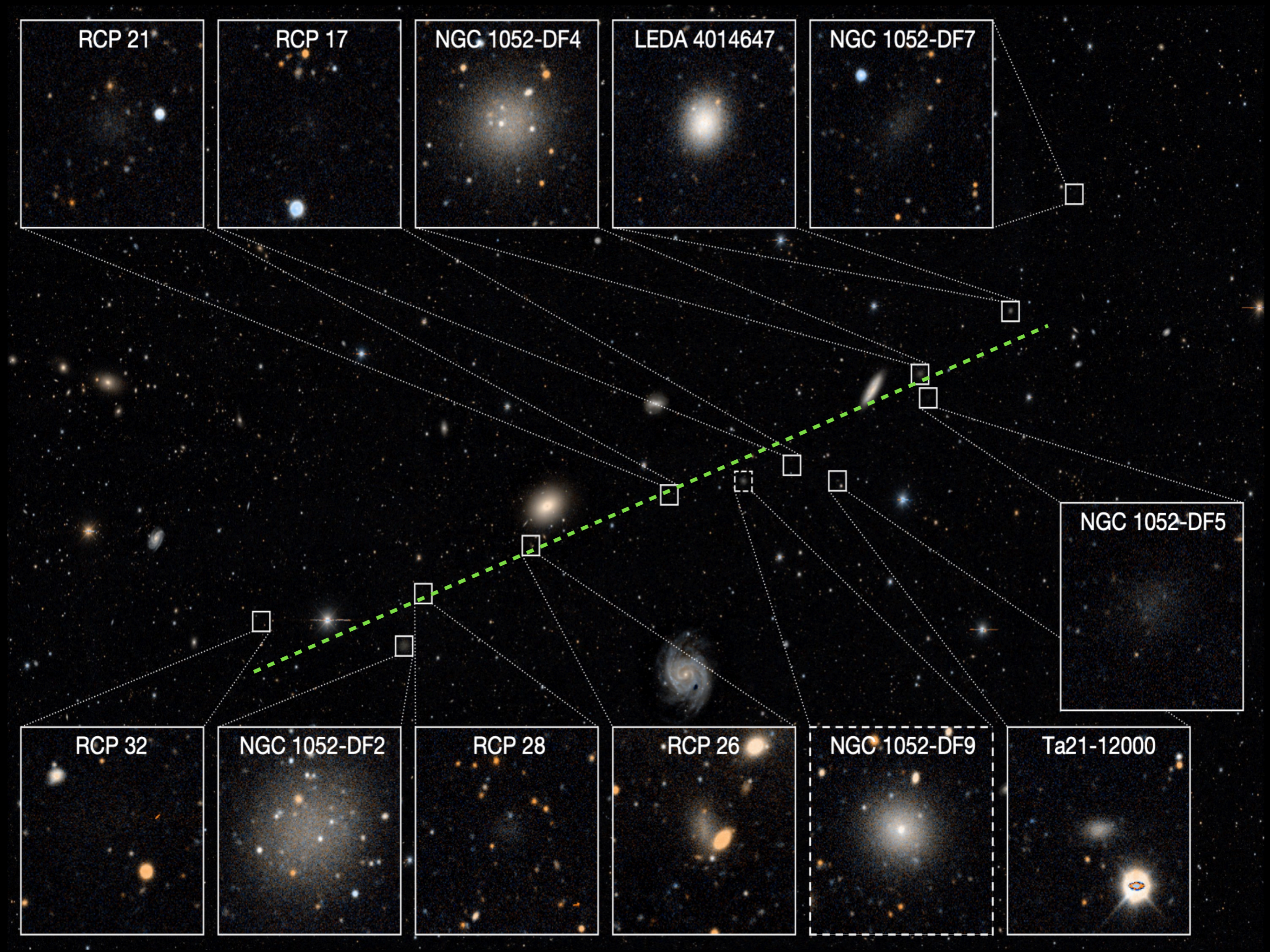
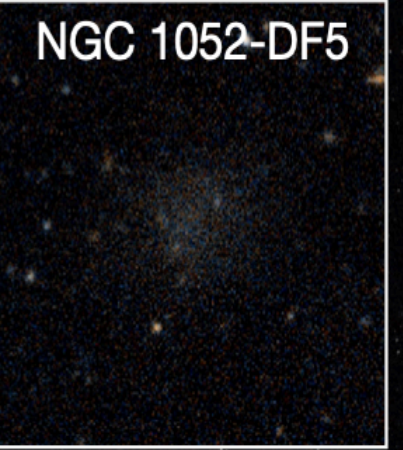
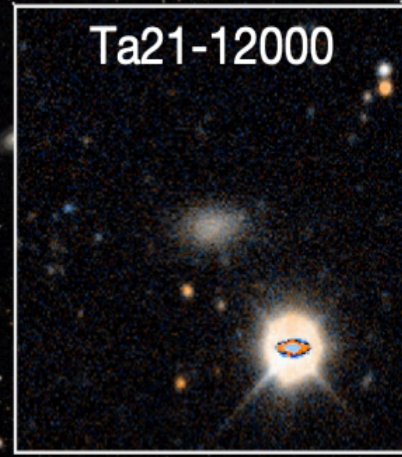
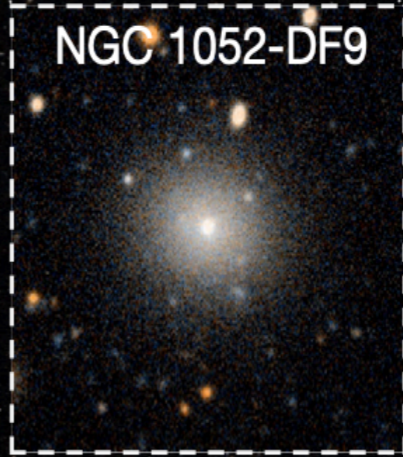
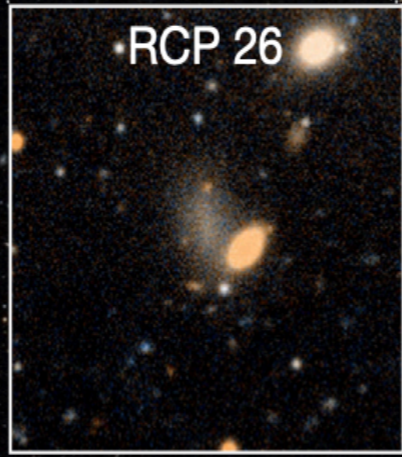
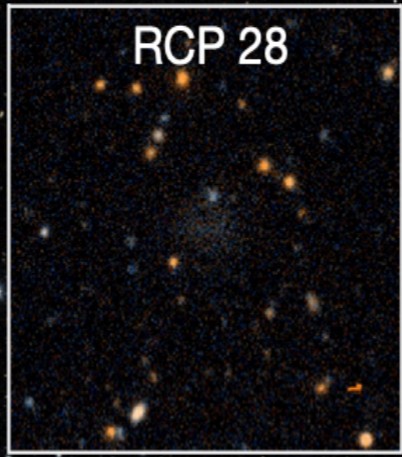
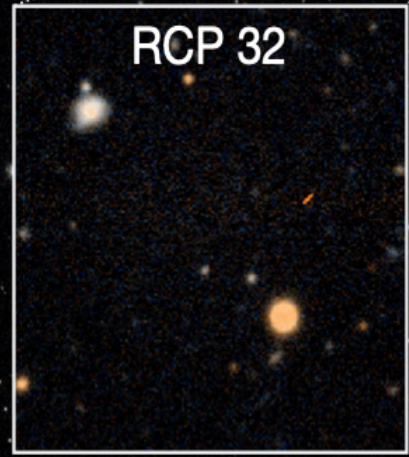
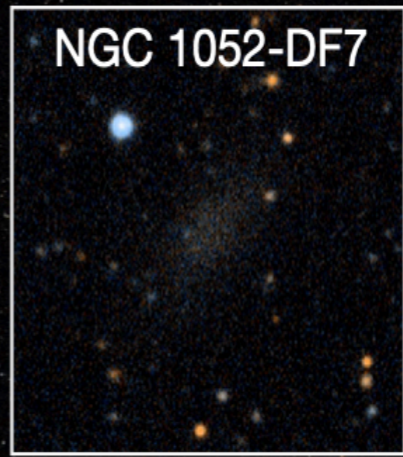
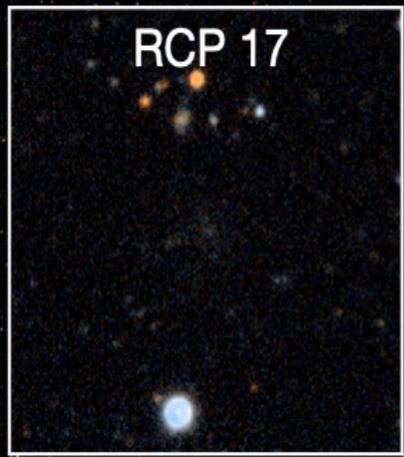
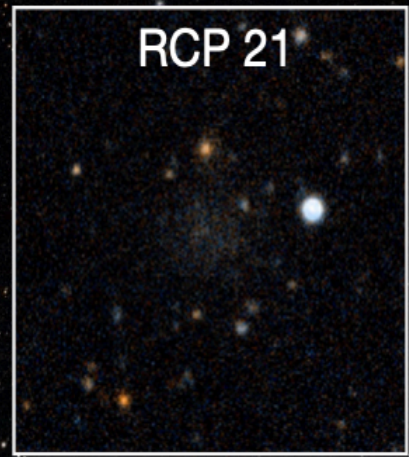
Received: 29 November 2021

<https://doi.org/10.1038/s41586-022-04665-6>

Daisuke Nagai⁶ & Aaron Romanowsky^{7,8}
Dhruba Dutta Chowdhury¹, Roberto Abraham⁴, Charlie Conroy⁵, J. M. Diederik Kruijssen²,
Pieter van Dokkum¹, Zili Shen¹, Michael A. Keim¹, Sebastian Trujillo-Gomez², Shany Danieli³

Mock u/g/r image





Theoretical scenario #3

Tidal stripping by a massive neighbour

Monthly Notices

of the

ROYAL ASTRONOMICAL SOCIETY



MNRAS **480**, L106–L110 (2018)

Advance Access publication 2018 July 27

doi:10.1093/mnras/sly138

Tidal stripping as a possible origin of the ultra diffuse galaxy lacking dark matter

Go Ogiya[★]

Laboratoire Lagrange, Université Côte d'Azur, Observatoire de la Côte d'Azur, CNRS, Blvd de l'Observatoire, CS 34229, F-06304 Nice, France

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MNRAS **510**, 2724–2739 (2022)

Advance Access publication 2021 December 16

<https://doi.org/10.1093/mnras/stab3658>

On the tidal formation of dark matter-deficient galaxies

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¹Waterloo Centre for Astrophysics, University of Waterloo, Waterloo, ON N2L 3G1, Canada

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³Department of Astronomy, Yale University, PO. Box 208101, New Haven, CT 06520-8101, USA

⁴Universitäts-Sternwarte München, Scheinerstraße 1, D-81679 München, Germany

⁵Max-Planck-Institut für extraterrestrische Physik, Postfach 1312, Gießenbachstraße, D-85741 Garching, Germany

Theoretical scenario #3'

Extreme encounters with a massive neighbour

















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<https://doi.org/10.1038/s41550-021-01598-4>

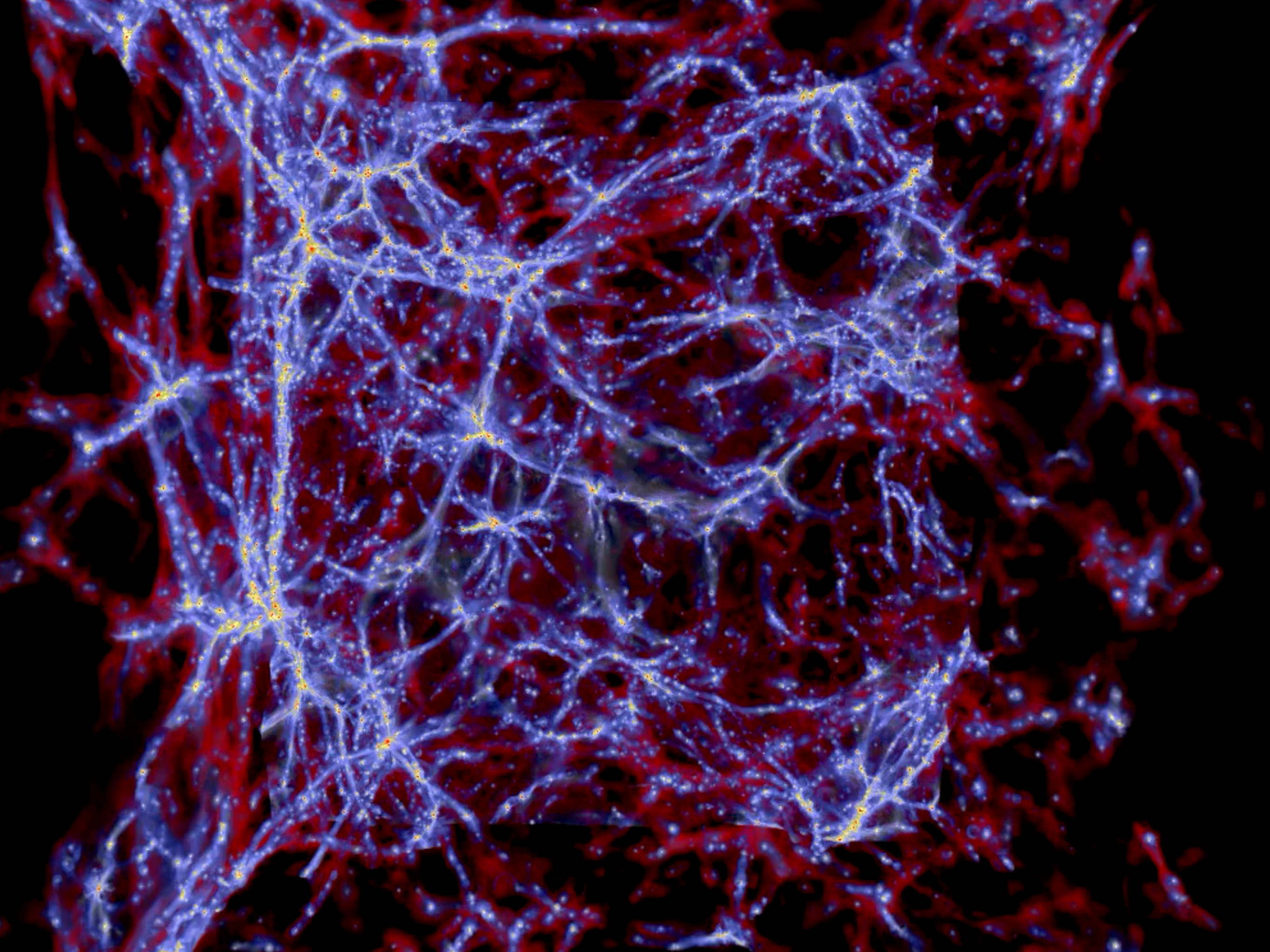
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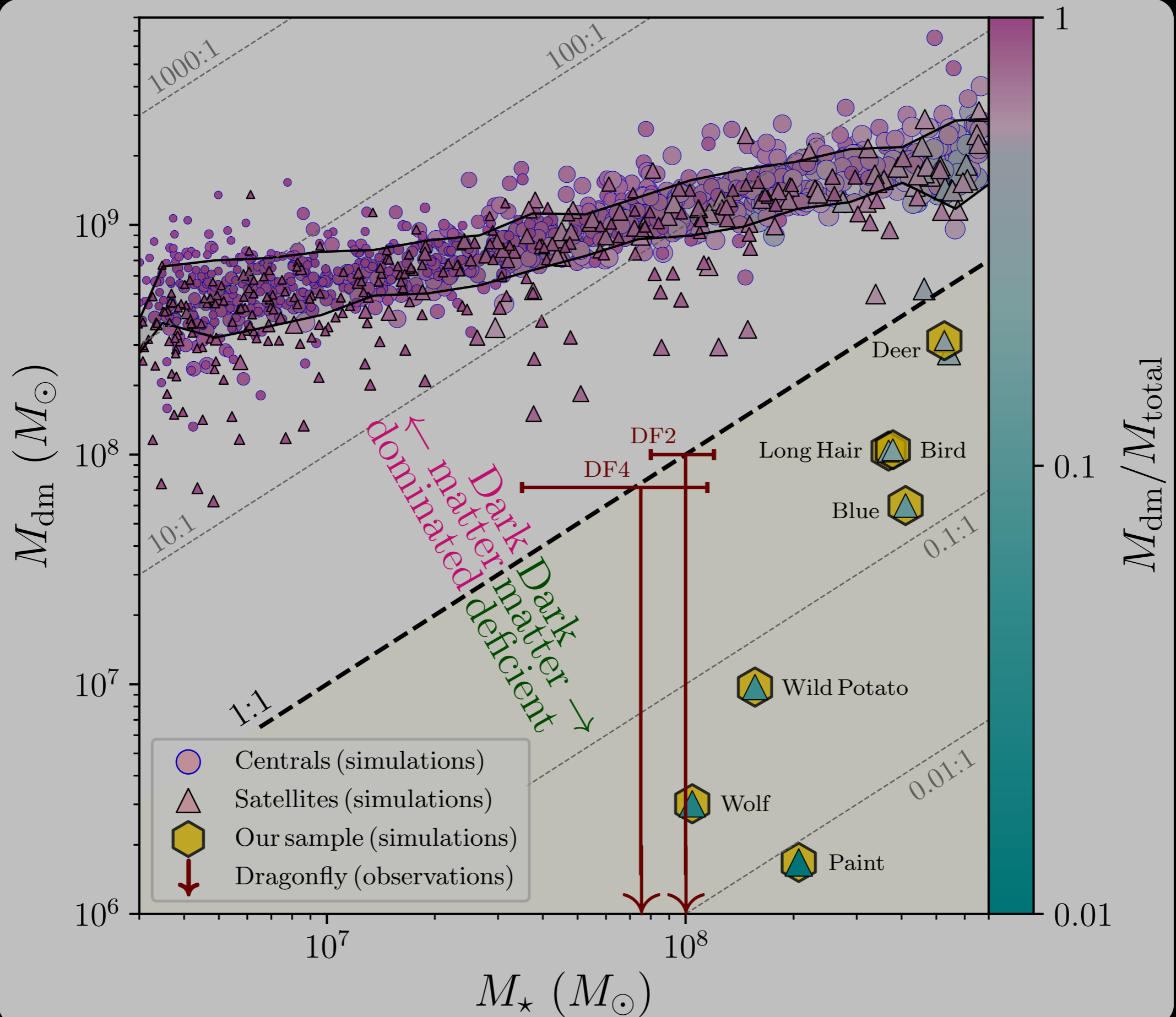
Galaxies lacking dark matter produced by close encounters in a cosmological simulation

Jorge Moreno ^{1,2,3} , Shany Danieli^{4,5}, James S. Bullock ², Robert Feldmann ⁶, Philip F. Hopkins³, Onur Çatmabacak ⁶, Alexander Gurvich⁷, Alexandres Lazar ², Courtney Klein ², Cameron B. Hummels ³, Zachary Hafen ², Francisco J. Mercado ², Sijie Yu ², Fangzhou Jiang ^{3,8}, Coral Wheeler⁹, Andrew Wetzel ¹⁰, Daniel Anglés-Alcázar ^{11,12}, Michael Boylan-Kolchin ¹³, Eliot Quataert⁴, Claude-André Faucher-Giguère ⁷ and Dušan Kereš¹⁴

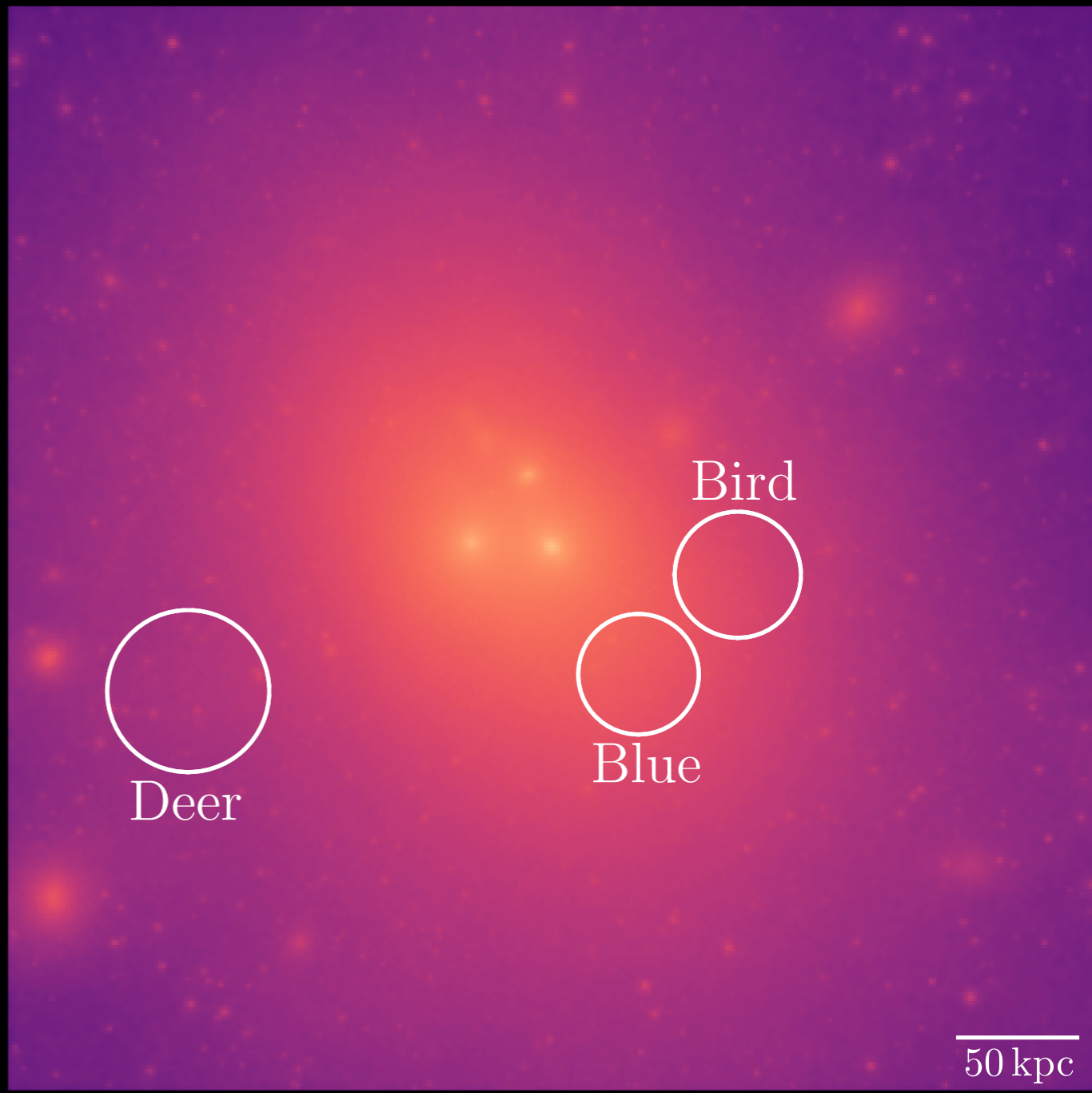
Eliot Quataert⁴, Claude-André Faucher-Giguère ⁷ and Dušan Kereš¹⁴

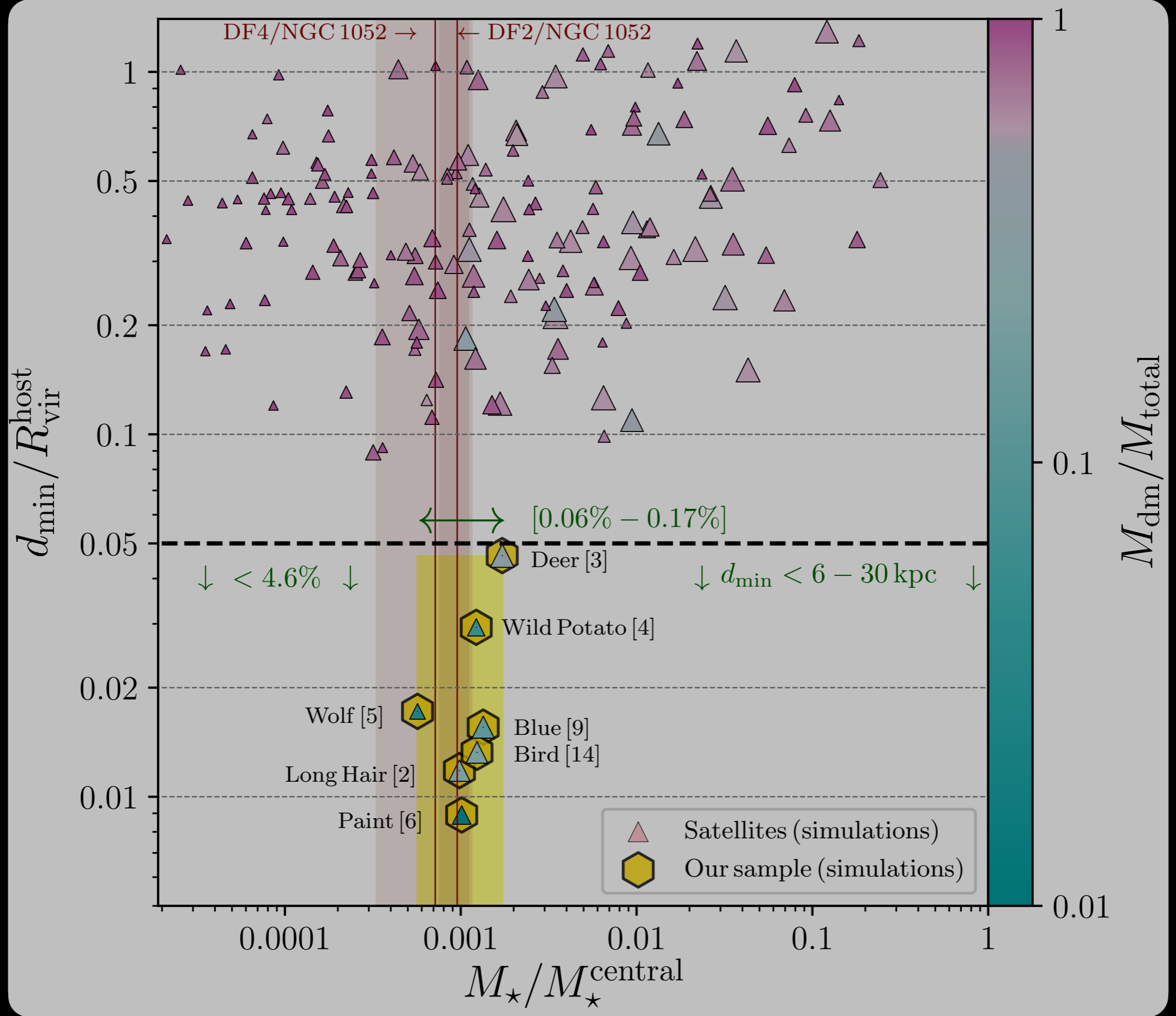
Coral Wheeler⁹, Andrew Wetzel ¹⁰, Daniel Anglés-Alcázar ^{11,12}, Michael Boylan-Kolchin ¹³











Thank you

