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Algebraic Topology

New submissions

Submissions received from Tue 4 Aug 20 to Wed 5 Aug 20, announced Thu, 6 Aug 20

- New submissions
- Replacements

[total of 3 entries: **1-3**]
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New submissions for Thu, 6 Aug 20

[1] arXiv:2008.02071 [pdf, other]
Title: Persistent Homology in ℓ_{∞} Metric
Authors: Gabriele Beltramo, Primoz Skraba
Comments: 28 pages, 13 figures
Subjects: Computational Geometry (cs.CG); Algebraic Topology (math.AT)

Proximity complexes and filtrations are a central construction in topological data analysis. Built using distance functions or more generally metrics, they are often used to infer connectivity information from point clouds. We investigate proximity complexes and filtrations built over the Chebyshev metric, also known as the maximum metric or ℓ_{∞} metric, rather than the classical Euclidean metric. Somewhat surprisingly, the ℓ_{∞} case has not been investigated thoroughly. Our motivation lies in that this metric has the far simpler numerical tests which can lead to computational speedups for high-dimensional data analysis. In this paper, we examine a number of classical complexes under this metric, including the \v{C}ech, Vietoris-Rips, and Alpha complexes. We also introduce two new complexes which we call the Alpha clique and Minibox complexes. We provide results on topological properties of these, as well as computational experiments which show that these can often be used to reduce the number of high-dimensional simplices included in \v{C}ech filtrations and so speed up the computation of persistent homology.

Replacements for Thu, 6 Aug 20

[2] arXiv:1704.01683 (replaced) [pdf, other]
Title: Representability theorem in derived analytic geometry
Authors: Mauro Porta, Tony Yue Yu
Comments: 85 pages. This version is a minor revision
Subjects: Algebraic Geometry (math.AG); Algebraic Topology (math.AT); Complex Variables (math.CV)

[3] arXiv:1712.06847 (replaced) [pdf, ps, other]
Title: Persistence-like distance on Tamarkin's category and symplectic displacement energy
Authors: Tomohiro Asano, Yuichi Ike
Comments: 27 pages, 2 figures, v3: final version, v2: revised
Journal-ref: J. Symp. Geom. 18:3 (2020) 613-649
Subjects: Symplectic Geometry (math.SG); Algebraic Topology (math.AT)

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- Replacements

[total of 3 entries: **1-3**]
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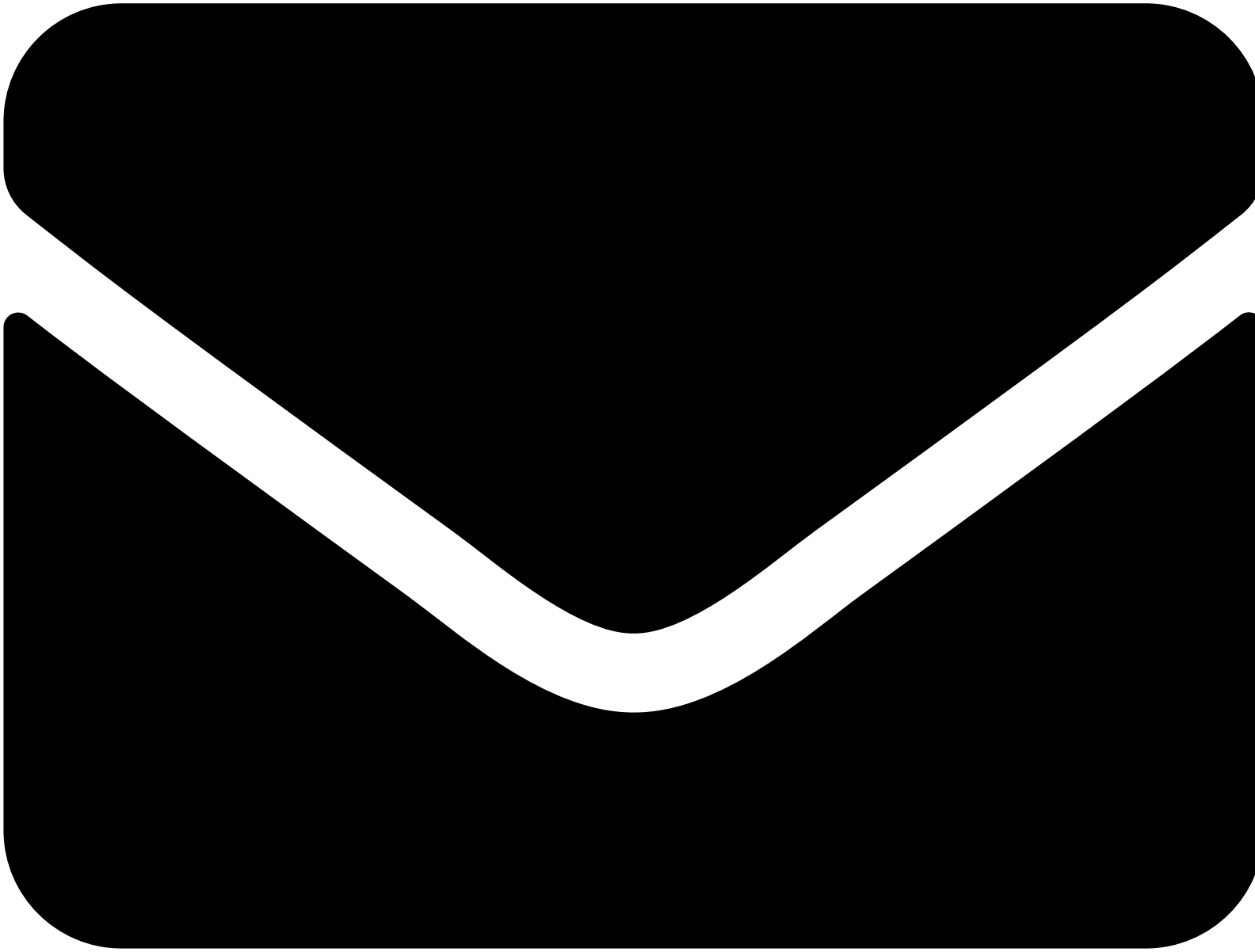

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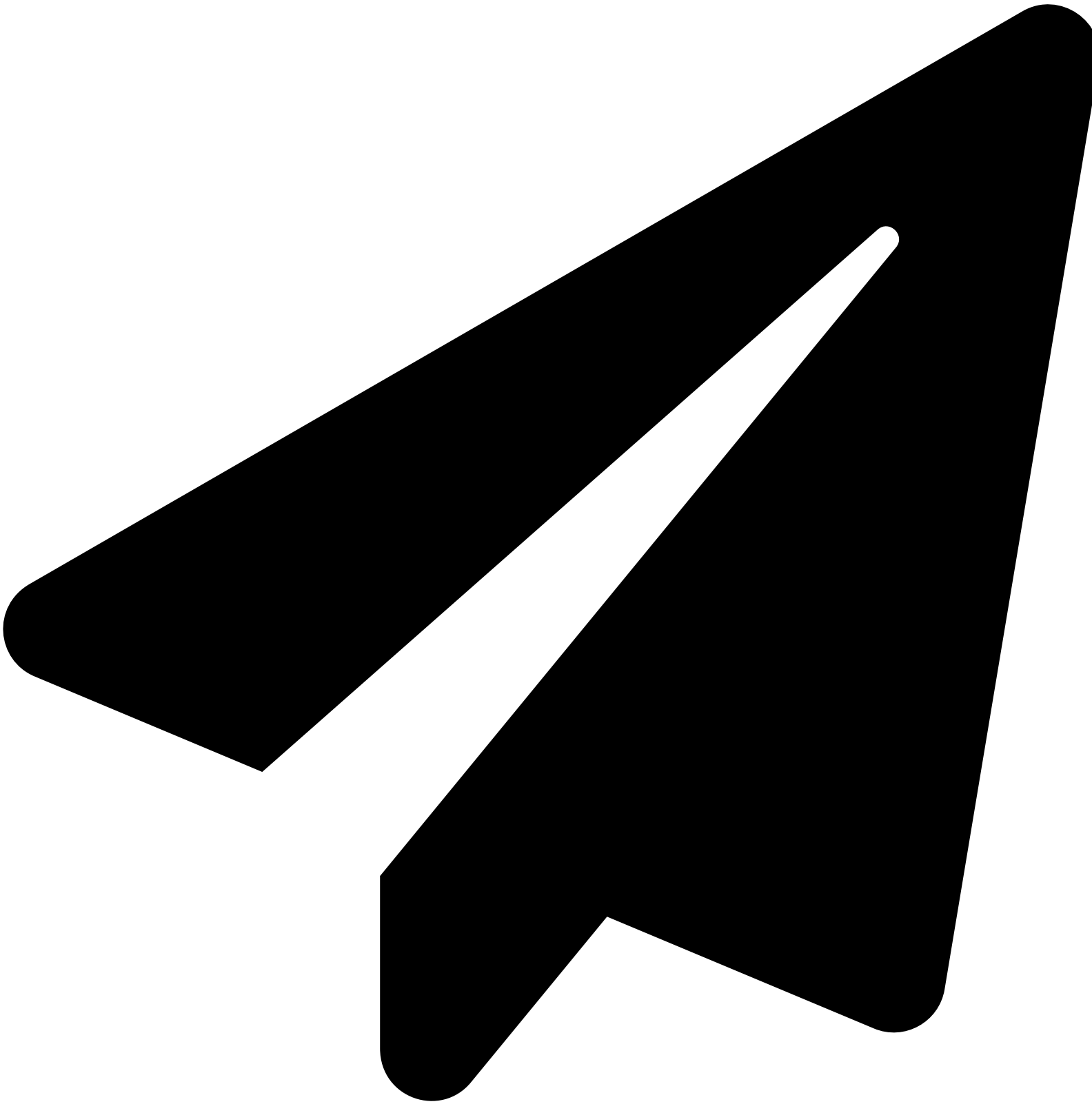

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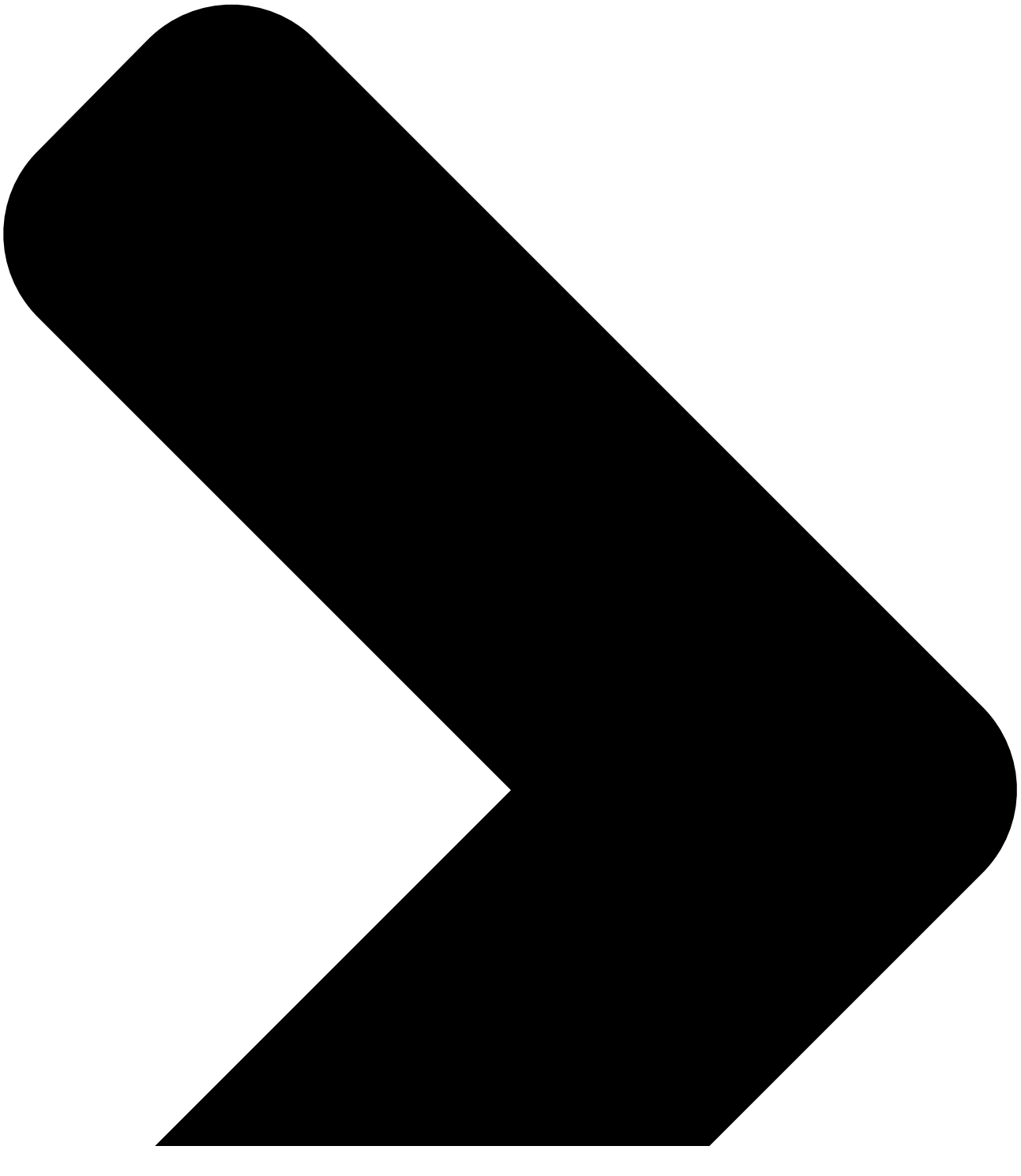

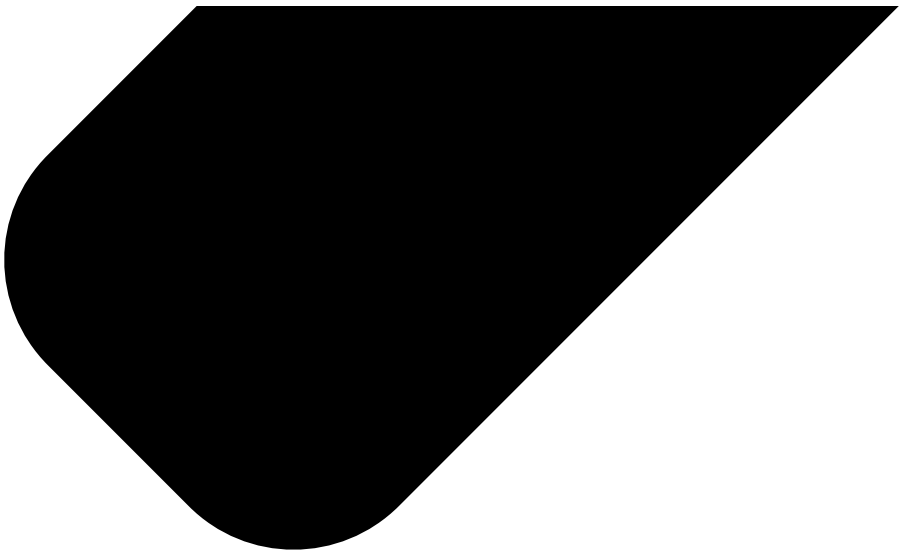

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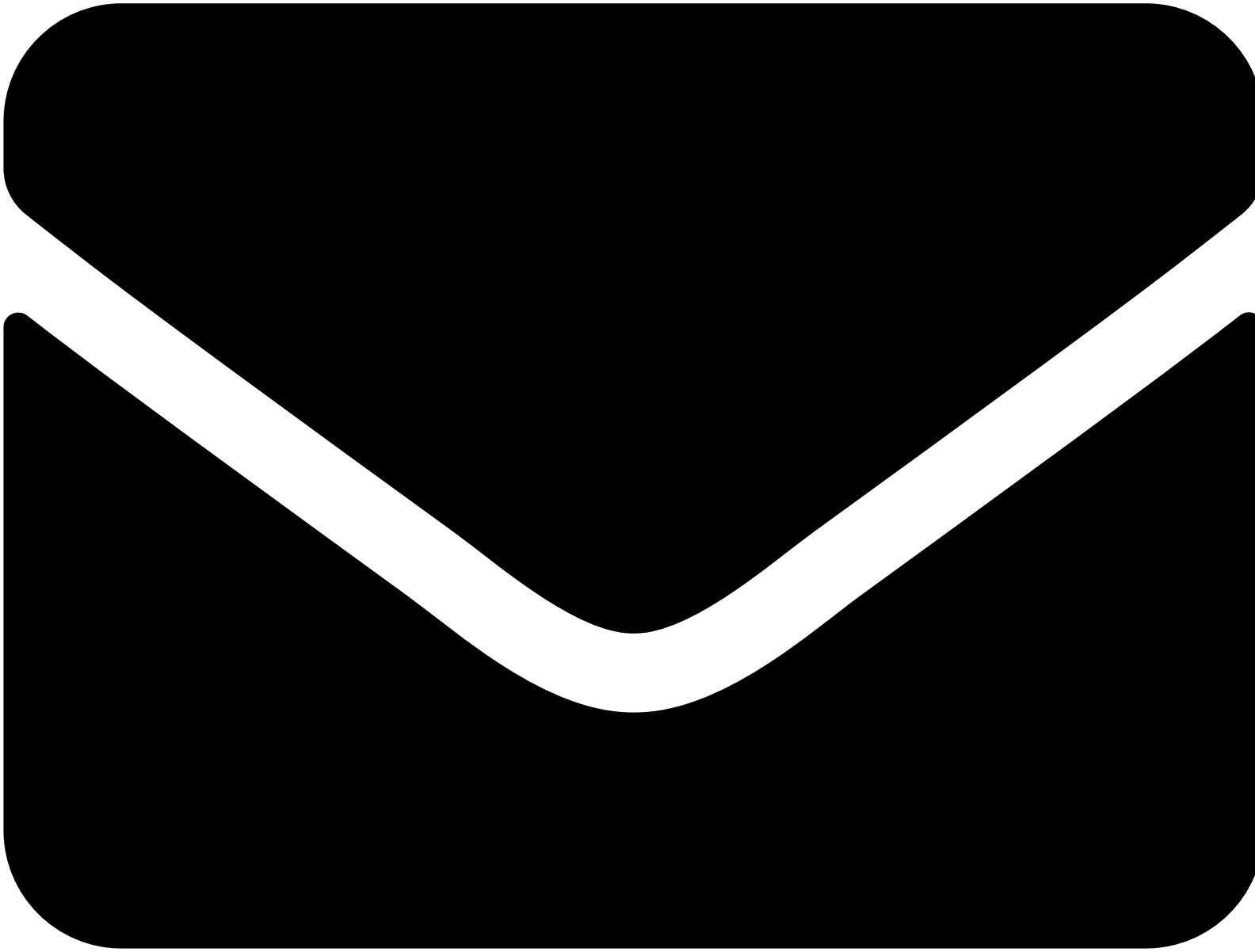

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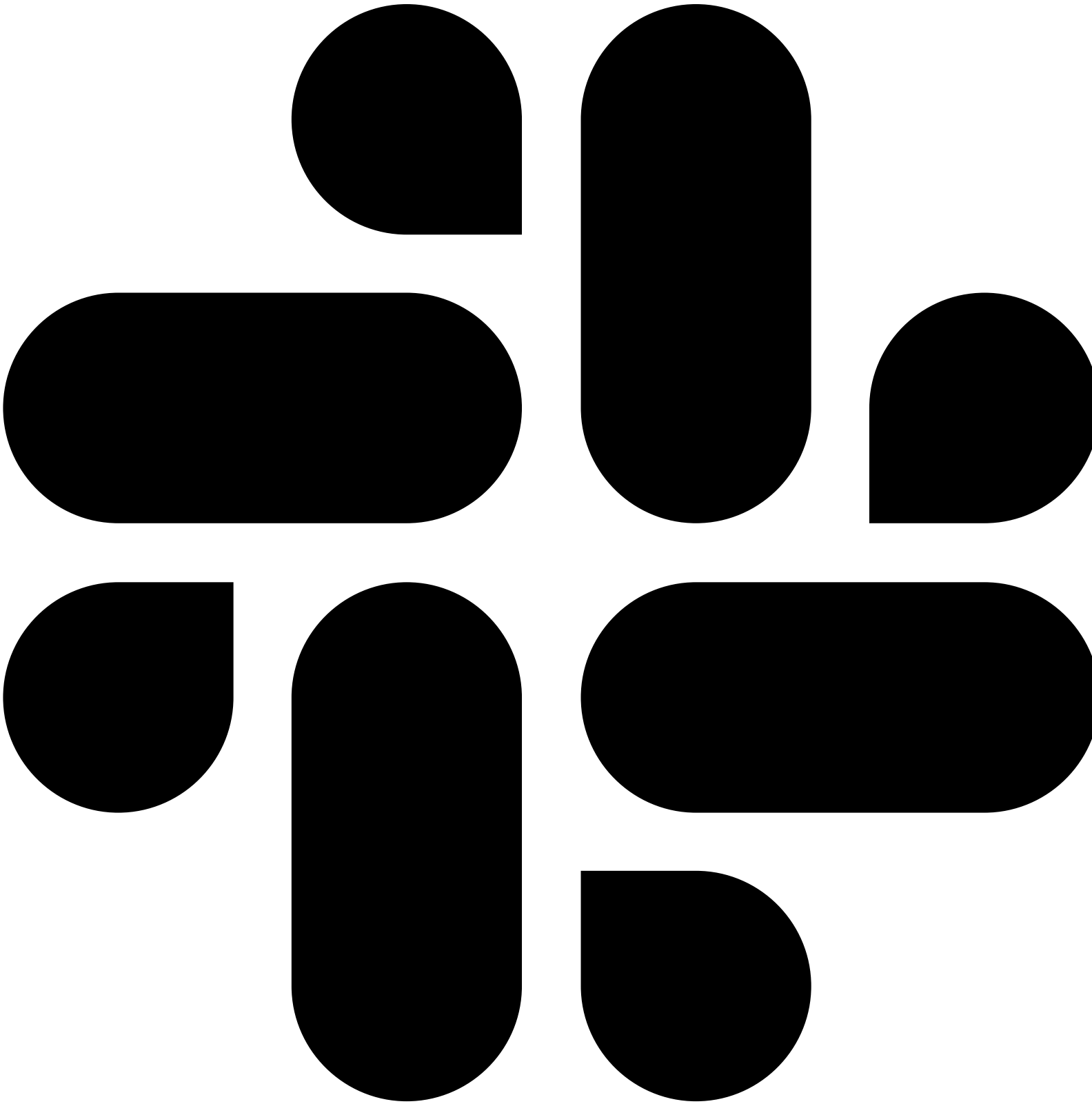

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