

Nondegenerate Rectangles and Triangles in Area-Law Templates

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Verdict: local-correction (resolved).

1 The source definition

Definition 9.3 of the two-dimensional area-law manuscript of September 24, 2026 [Ope26] (`08-scanner.tex`, lines 546–564) defines a template with parameters (n, s_0) as a nonempty finite set $T \subset \mathbb{Z}^2$ of the form

$$T = \bigcup_{a=1}^{N_0} (P_a \cap \mathbb{Z}^2), \quad n \geq C_{\text{tpl}} N_0 (s_0 + 1), \quad \text{diam}_\infty T \leq n,$$

with $N_0 \geq 1$, where each P_a is a closed convex rectangle or triangle of sup-norm diameter at most s_0 , all of whose sides have slope $0, \infty, 1$ or -1 .

2 The convention

The words rectangle and triangle are read in their ordinary sense: a triangle has three noncollinear vertices, and a rectangle has two nonzero orthogonal adjacent sides. A literal reading that also admitted a segment or a point as a degenerate rectangle or triangle is not intended by the source. Its remark after the definition (lines 566–569) states that the estimates use the pieces only through their number N_0 and their sizes. The nonemptiness of T and the bound $N_0 \geq 1$ are printed in the source and are not part of the convention.

The convention is built into the definition of the permitted polygons.¹ No downstream statement carries a separate nondegeneracy hypothesis.

3 Effect

The convention is a reading of the source’s words, not an additional hypothesis on any theorem, and no elimination is planned.

¹`TNLean.PEPS.AreaLaw.Geometry.TemplatePolygon`.

References

- [Ope26] OpenAI. A two-dimensional area law from a global spectral gap, 2026.
September 24, 2026 manuscript.