



Brigitte Servatius



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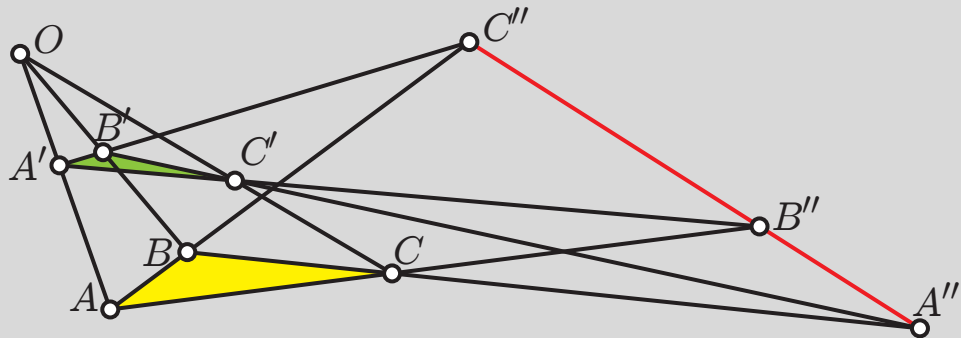
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Dimension of a point line configuration



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The k -plane matroids

Given: A Hypergraph: $(A, B; I)$

The k -plane matroid on I has independent sets $I' \subseteq I$ defined via:

For all $I'' \subseteq I'$, we have

$$|I''| \leq |A(I'')| + k|B(I'')| - k$$

The triangular prism in the 3-plane matroid



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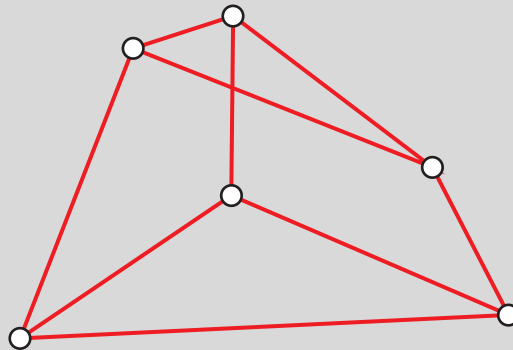
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$$v = 6$$

$$f = 5$$

$$i = 18$$

$$v + 3f - 3 = 18$$



Only trivial lifts with six generic points in the plane.

The triangular prism in the 3-plane matroid



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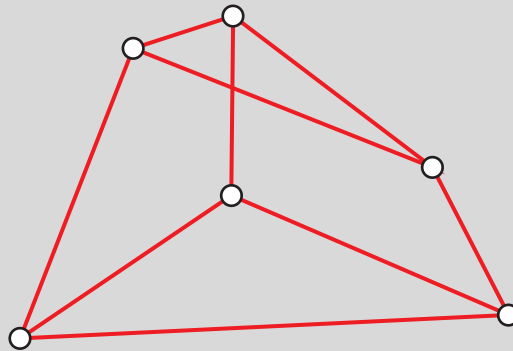
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$$v = 6$$

$$f = 3$$

$$i = 12$$

$$v + 3f - 3 = 12$$



Only trivial lifts with six generic points in the plane.

The triangular prism in the 3-plane matroid



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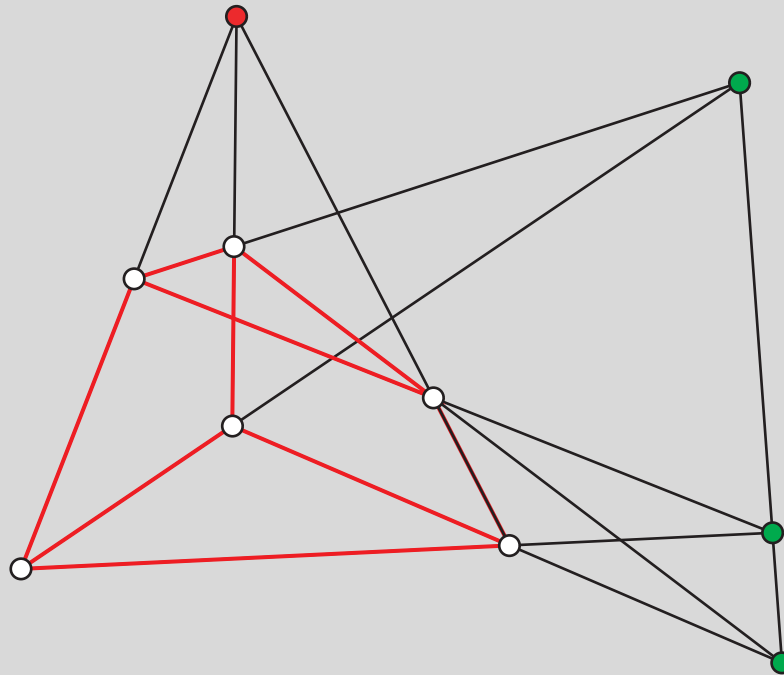
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$$v = 6$$

$$f = 3$$

$$i = 12$$

$$v + 3f - 3 = 12$$



The triangular prism lifts iff the points complete to a Desargues configuration.



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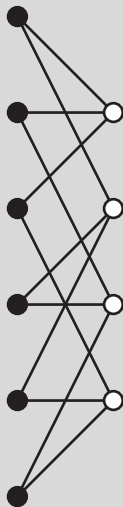
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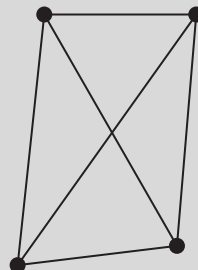
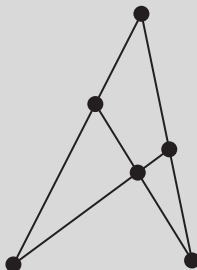
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$\mathfrak{M}_2(K_{6,4})$
rank 12



$\mathfrak{M}_2(K_{4,6})$
rank 14





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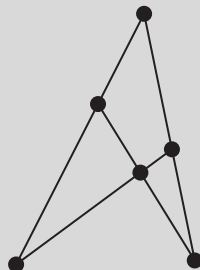
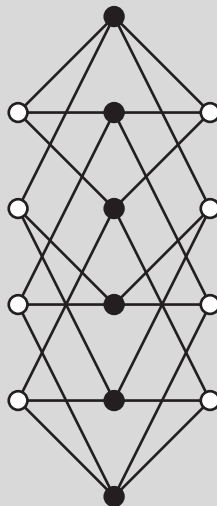
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$\mathfrak{M}_2(K_{6,4})$
rank 12



$\mathfrak{M}_2(K_{4,6})$
rank 14

