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# The topology of the external activity complex of a matroid

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## Résumé

We prove that the external activity complex  $\text{Act}_{<}(M)$  of a matroid is shellable. In fact, we show that every linear extension of Las Vergnas's external/internal order  $< \text{ext}/\text{int}$  on  $M$  provides a shelling of  $\text{Act}_{<}(M)$ . We also show that every linear extension of Las Vergnas's internal order  $< \text{int}$  on  $M$  provides a shelling of the independence complex  $\text{IN}(M)$ . As a corollary,  $\text{Act}_{<}(M)$  and  $M$  have the same h-vector. We prove that, after removing its cone points, the external activity complex is contractible if  $M$  contains  $U_{3,1}$  as a minor, and a sphere otherwise.

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\*Intervenant