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Coincidental Types and their Minuscule Doppelgängers

For each coincidental type $X_n \in \{A_n, B_n, H_3, I_2(m)\}$, there exists a minuscule poset that is a "doppelgänger" of the root poset $\Phi^+(X_n)$—both posets have a related number of linear extensions and a related number of plane partitions of height k. Furthermore, there is a second minuscule poset whose top half is $\Phi^+(X_n)$. These two facts are related.

We synthesize M. Haiman's rectification, K. Purbhoo's folding, H. Thomas and A. Yong's minuscule K-theoretic Schubert calculus techniques, and a remark made by R. Proctor to give a framework for combinatorial proofs of these poset coincidences. This is joint work with Zachary Hamaker, Rebecca Patrias, and Oliver Pechenik.