

GENERALISED BLOCK DECOMPOSITIONS OF LIE GROUPS AND POSITIVITY

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ABSTRACT. In this talk I will summarise some recent work, joint with Anna Wienhard, Zack Greenberg, and Merik Niemeyer, where we construct non commutative cluster coordinates on configuration spaces of partial flags associated with real Lie groups. The key idea of the theory in some sense is a “generalised block decomposition” of elements of the group; in this way we think of the original group as being a simpler group but with non-commutative entries. An elementary example coming from breaking elements of Gl_{kp} in to uniform blocks of size k , so that we think of Gl_{kp} as being Gl_p but with entries k by k matrices. Our construction in some special cases gives coordinates on Theta-positive configurations, which are generalisations of the cluster parametrisation of the positive Grassmannian.