

## SEMINARIO DI GEOMETRIA

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Politecnico di Torino,  
Dipartimento di Scienze Matematiche,  
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### Projections Between Grassmann Cones and the Universality of Rank 6 Plücker Relations

The Plücker relations are quadratic polynomials that characterize the Grassmannian Variety. In general, as quadratic forms, these relations take every possible even rank greater than or equal to six. (Only in the case  $k = 2$  or  $k = n - 2$  can the Grassmannian  $Gr(k, n)$  be characterized only with Plücker relations of the minimal rank.) In this talk I will present a natural alternative to the Plücker relations motivated by mathematical physics and developed as part of an undergraduate research project. This alternative characterization is simpler in that all of the relations can be taken to be of quadric rank six. The proof involves linear maps between the affine cones of the Grassmannians and provides the attractive interpretation that  $Gr(k, n)$  is the intersection of a finite number of  $Gr(2, 4)$  cones for any  $k$  and  $n$ .