1009-52-134 **Hervé Brönnimann*** (hbr@poly.edu), CIS Dept, Polytechnic University, Six Metrotech, Brooklyn, NY 11201. *Counting and Bounding the Number of Tangents to Four Objects in 3D.*

I will present some recent work bounding the number of tangents to four objects in $\mathbb{R}^3$. It is well-known that four lines in general position admit at most two transversals. We showed that four disjoint convex polyhedra in general position, of total complexity n, have $O(n^2)$ tangents, and that any four out of k disjoint such have $O(n^2k^2)$ tangents. A more recent paper extends this result to non-general position, including non-disjointness.

We also investigated exact bounds for simpler classes of objects. We showed that n segments may admit up to n transversals, or an infinity (still at most n connected components). In the case of four triangles in suitably-defined general position, an upper bound of 162 can be lowered to 156 if the triangles are disjoint, and I will show such a construction with 62 distinct tangent lines. With triangles not in general position, the same upper bounds hold for the number of connected components of transversals. A random enumeration of "fat" triangles yields many configurations with more than 20 and up to 40 transversals.

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