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Alexander Postnikov* (apost@math.mit.edu), Department of Mathematics, M.I.T.,
Cambridge, MA 02139. *Total positivity on the Grassmannian.*

We investigate the totally nonnegative part of the Grassmannian and its cell decomposition, which has an interesting combinatorial and geometric structure. These cells include the double Bruhat cells of Fomin-Zelevinsky, and the theory of double Bruhat cells can be extended to the Grassmannian. We present explicit subtraction-free parametrizations of the cells in terms of planar networks. We discuss connections with the inverse boundary problem for networks, with Fomin-Zelevinsky's cluster algebras, and with Lusztig's canonical bases. (Received September 01, 2006)