

# MANY CHEERFUL FACTS

presents

## Bruhat-Tits Spaces and the Exponential Map

a talk by Anton Geraschenko

1:10 pm - 2:00 on Wednesday, September 14th, in room  
1015.

*“It beats getting stoned, and it’ll keep you off the streets.”* - Serge Lang (A Particularly Cheerful Person)

I’ll talk about Bruhat-Tits spaces and show you the Bruhat-Tits fixed point theorem. This will make you cheerful. In the process of constructing an example, we’ll resolve the following anomaly:

The exponential map is a map from a tangent space to a manifold preserving distances through the origin. But the exponential map is also just a map from the real numbers to positive real numbers, which doesn’t seem to preserve distances. Is it kosher to call both of these things “the exponential map”?

◦ Check out the MCF website: <http://math.berkeley.edu/~brownda/cheers/>

*I am the very model of a modern Major General,  
I've information vegetable, animal, and mineral,  
I know the kings of England, and I quote the fights historical  
From Marathon to Waterloo, in order categorical;  
I'm very well acquainted, too, with matters mathematical,  
I understand equations, both the simple and quadratical,  
About binomial theorem I'm teeming with a lot o' news,  
With many cheerful facts about the square of the hypotenuse!*

- Gilbert & Sullivan *P o P*