Geometry Seminar
Tuesday, Sep 28, 2010
Room 201 WWH at 6:00 P.M.

A cell complex in number theory

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Our point of departure is the observation that the set of squarefree positive integers less than or equal to n and ordered by divisibility is isomorphic to a simplicial complex. Thus we may consider this set of numbers, call it Δ_n, from a topological point of view.

Known facts from number theory can be interpreted as saying that the asymptotic rate of growth of Δ_n's Euler characteristic as $n \to \infty$ is closely related to deep properties of the prime number system, such as the Prime Number Theorem and the Riemann Hypothesis.

The talk will be primarily about the asymptotic growth behavior of the individual Betti numbers $\beta_k(\Delta_n)$ and of their sum. Also, a CW complex will be discussed whose cells correpond to *all* the numbers upp to n, not only the squarefree ones, and whose cell inclusion relation models that of divisibility.

The talk will be quite general and elementary, assuming no specialized background.

For more information please visit the seminar website at:
`http://www.math.nyu.edu/seminars/geometry_seminar.html`.