November 20: Geordie Williamson (University of Sydney), *Intersection cohomology over rings*

In the mid 70s Goresky and MacPherson introduced intersection cohomology. Their idea was to limit the extent to which cycles could intersect the singularities of the space. This was recast in sheaf theoretic language by Deligne and Goresky-MacPherson. Intersection cohomology has provided a powerful tool in topology, algebraic geometry, representation theory and combinatorics. It was pointed out in the first paper of Goresky and MacPherson that intersection cohomology over the integers does not possess a non-degenerate intersection form, in contrast to cohomology of smooth spaces. I will describe a solution to this issue, if one works over p-adic rings, and allows ramified extensions. I have no idea whether this theory is useful, but it does seem aesthetically appealing, and appears to solve a foundational issue.