Meeting: 1004, Bowling Green, Kentucky, SS 14A, Special Session on Geometric Topology and Group Theory

1004-20-50 **Nic Koban*** (nkoban@email.wcu.edu), Western Carolina University, Department of Mathematics, Belk 392, Cullowhee, NC 28723. *Controlled Topology Invariants of Translation Actions.*

Let $\partial\mathbb{R}^m$ denote the sphere at infinity of $\mathbb{R}^m$. There are two notions of a neighborhood in $\mathbb{R}^m$ of $e \in \partial\mathbb{R}^m$: (1) half-spaces in $\mathbb{R}^m$ perpendicular to e and (2) ordinary neighborhoods of e in $\mathbb{R}^m \cup \partial\mathbb{R}^m$.

Let n be a non-negative integer, G be a group of type F_n, and $\rho : G \to \text{Transl}(\mathbb{R}^m)$ be an action by translations of G on $\mathbb{R}^m$. The Bieri-Neumann-Strebel-Renz invariants $\Sigma^n(\rho)$ can be defined using a topological property of ρ called *controlled* $(n-1)$*-connected (or* CC^{n-1}*) toward* e. This will be explained during the talk. This property is defined using notion (1) of a neighborhood of e.

There is a natural definition competing with CC^{n-1} which uses notion (2) called *bounded* $(n-1)$*-connected (or* BC^{n-1}*) toward* e. How are CC^{n-1} and BC^{n-1} related? For cocompact actions, one relation is the following: ρ is BC^{n-1} in the direction e if and only if ρ is CC^{n-1} in all directions lying in an open $\frac{\pi}{2}$-neighborhood of e. (Received January 12, 2005)