

Speaker: Ioannis Souldatos
University of Detroit Mercy

Tuesday, October 14, 2014
11:00 am
Room: 125 Hayes-Healy Hall

Title: Spectra of Scott sentences

Abstract:

Let φ be an $L_{\omega_1, \omega}$ sentence. The *spectrum* of φ is the set

$$\text{spec}(\varphi) = \{\kappa : \kappa \text{ is a cardinal and there exists a model of } \varphi \text{ of size } \kappa\} .$$

Then there are three possibilities: either $\text{spec}(\varphi)$ contains all cardinals, or $\text{spec}(\varphi) = [\aleph_0, \kappa)$, for some κ , or $\text{spec}(\varphi) = [\aleph_0, \kappa]$, for some κ . In the third case, where $\text{spec}(\varphi) = [\aleph_0, \kappa]$, we say that κ is *characterized* by φ , or that κ is *characterizable*.

Main Question: What cardinals are characterized by complete $L_{\omega_1, \omega}$ sentences?

By a result of J. Knight, \aleph_1 is characterized by some “complete” $L_{\omega_1, \omega}$ sentence. By a result of G. Hjorth, the same is true for all \aleph_α , for countable α . We will present some recent results about the Main Question.