

Scientific Report on ESF Short Visit Grant
New Frontiers of Infinity:
Mathematical, Philosophical and Computational Prospects

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Purpose of the visit:

Funded by the grant, I visited Vienna, from June 14 - June 21, 2009, where I attended the first week of the ESI Workshop in Large Cardinals and Descriptive Set Theory.

Description of work carried out:

I attended conference talks, and discussed some research questions with others at the conference. I also gave a talk on some of my work. The main issue I was working on was understanding the extent of the homogeneously Suslin sets in the minimal models of 1, and 2, Woodin cardinals.

Description of results of the work:

Although some interesting ideas were identified, unfortunately no definitive results were obtained. A seemingly promising idea that arose during the visit is to analyse the closure (or otherwise) of the homogeneously Suslin sets in M_n under the universal real quantifier. Such closure is equivalent to the identification of the homogeneously Suslin sets with $\mathbf{\Pi}_1^1$ in M_1 , or with $\mathbf{\Pi}_2^1$ in M_2 . The question of whether such closure holds in V appears to be open also. A variation of this idea also arose: Suppose that in M_1 , $A(x, y)$ is homogeneously Suslin. Can one always define (in M_1) an absolute tree representation of the set of reals x such that for all y , $A(x, y)$? (That is, the tree should project to the interpretation of this set in V , or at least over all reals which are in a generic extension of M_1 via its extender algebra.) If so, then all homogeneously Suslin sets are $\mathbf{\Pi}_1^1$ in M_1 . A similar construction might work in M_2 . Also, in these questions, it suffices to reduce to dealing with a homogeneously Suslin, co-homogeneously Suslin set. Resolutions of these questions could lead to interesting results.