Special Topology & Geometry Meeting

On Wednesday, August 28, 2013 at 10:00-15:00
in room 614 of the Science & Education Building, University of Haifa

- 10:00-12:00 Prof. Emmanuel Farjoun (Hebrew University of Jerusalem):
  “On the cellular properties of nilpotent spaces”

Abstract: We will discuss new understanding of the cellularity and homology/homotopy relations of nilpotent spaces. This implies some new insights on spaces with vanishing generalized (co)homology.

The problem starts with attempts to understand the fundamental group of the cellular approximations of $K(\pi, 1)$. Similar problems in groups theory context and work of Flores and Scherer suggest to start with the nilpotent context.

Using a modified version of the classical Bousfield-Kan tower and ideas stemming for Libman’s thesis and work by Chachólski, one can prove close homological and cellular relation between any space $X$ and the tower $\mathbb{Z}_nX$. For nilpotent spaces this lead to a close relation between the generalized homology of $X$ and that of its Postnikov approximations $P_nX$, formulated in the stronger terms of cellular inequality. Finally, this provides an immediate algebraic formula for the fundamental group of any cellular approximation of $BN$ for a general nilpotent discrete group $N$.

Joint work with Wojciech Chachólski, Ramón Flores, and Jérôme Scherer.

- 13:00-13:50 Dr. Ajay Singh Thakur (University of Haifa):
  “On trivialities of characteristic classes over suspension space”

Abstract: A CW-complex $X$ is said to be $W$-trivial if for any vector bundle $\xi$ over $X$, the total Stiefel-Whitney class $W(\xi) = 1$. It is a theorem of Atiyah-Hirzebruch that the $k$-fold suspension $\Sigma^kX$ of any CW-complex $X$ is $W$-trivial if $k > 8$. It is therefore an interesting question to understand for what value of $k$, $0 \leq k \leq 8$, is the iterated suspension $\Sigma^kX$, of a CW-complex $X$, $W$-trivial. A related notion is that of $C$-triviality. A CW-complex $X$ is said to be $C$-trivial if for any complex vector bundle $\eta$ over $X$, the total Chern class $c(\eta) = 1$. In this talk we shall state some general results and investigate when the iterated suspensions of projective spaces are $W$-trivial and $C$-trivial.

- 14:00-14:50 Dr. Boris Chorny (University of Haifa at Oranim):
  “A classification of small homotopy functors from spectra to spectra”

Abstract: We show that every small homotopy functor from spectra to spectra is weakly equivalent to a filtered colimit of representable functors represented in co-branched spectra. Moreover, we present this classification as a Quillen equivalence of the category of small functors from spectra to spectra equipped with the homotopy model structure and the opposite of the pro-category of spectra with the strict model structure.