Friday Sept. 4th

[4pm] Check-in at the *Front Desk Reception*, this is in the "Professional Development Centre" building. See the included map of the Banff Centre. The lounge on the 2nd floor of Corbett Hall is a place to relax after you've checked in.

[4:30pm] Meet in front of Corbett Hall (BIRS) for a less-than 1-hour hike up Tunnel Mountain – this is the small mountain that BIRS is sitting on.

[5:30pm – 6:30pm] **Ryan Budney** will give a short introduction and speak on *Operads and spaces of embeddings* in the Max Bell Room 159.

> *Abstract:* When I was an undergraduate, I went on a trip to Spain with George Peschke. I lived in a Jesuit monestary and studied mathematics. During the stay in Spain, there was a conference on localization, where among other things I had a dinner with both Allen Hatcher and Fred Cohen. A few years later I was Allen's grad student, and a few years later I was a postdoc at Rochester, working with Fred Cohen. That period sparked some research where it felt as if I was trying to meld the minds of Allen and Fred. The main observation was that there are natural operad actions on spaces of embeddings, and that these actions in turn are a major component of the structure theorems (when known) of the homotopy type of these embedding spaces. I'll survey the main developments in the area, and some current work with Paolo Salvatore on some new operad actions that see 'more deeply' into the homotopy-types of some embedding spaces, and related curiosities.

7pm disorganized dinner in Banff

Evening - beverages and snacks available in BIRS lounge, 2nd floor of Corbett Hall. These are mostly available on an honour system – a price chart should be available.

Saturday Sept. 5th

[7am – 9am] Breakfast options on the Banff Centre campus: Gooseberry's Deli or the Vistas Dining Room in the Sally Borden Building are fairly convienient. Gooseberry's has a buffet. There is also the Kiln Cafe beside David Cameron Hall. See included map.

[9am – 10am] **Hyam Rubinstein** will speak on the $\mathbb{Z}_2$-*Thurston norm, minimal triangulations and algorithms* in the Max Bell Room 159.

> *Abstract:* The first part is joint work with Jaco and Tillmann. A norm can be defined for $\mathbb{Z}_2$-homology classes. This gives a useful lower bound on the number of tetrahedra in any triangulation of a 3-manifold with non zero $\mathbb{Z}_2$-homology and in some cases, there are minimal triangulations realising this lower bound. Moreover coverings and layered solid tori can also be used to give more classes of 3-manifolds for which minimal triangulations can be classified. Finally in recent work with Burton and Tillmann, we show that the Weber-Seifert hyperbolic dodecahedral space is non Haken, answering a question of Thurston.

[10am – 10:30am] Tea available in the Corbett Hall Lounge.

[10:30am – 11:30am] **Tara Brendle** will speak on *The symmetric Torelli group* in the Max Bell Room 159.

> *Abstract:* We will discuss the subgroup of the mapping class group of a surface consisting of those elements which act trivially on homology and which also commute with a fixed hyperelliptic involution. This group can also be viewed as a certain kind of "pure" braid group. Motivated by a conjecture of Hain on the generation of this group, we will discuss new relations in this group which are thereafter also new relations in the full Torelli group. If time permits, we will also discuss a theory of "symmetric homology" which provides an approach to Hain's conjecture.

[11:30am – 1pm] Lunch

[1:30pm] Meet in front of Corbett hall for the carpool to the Sulphur mountain trailhead. This is also a good time to 2nd guess this part of the plan if the weather turns ominous.

[2pm] Arrive at the Sulphur Mountain trailhead, and hike up the mountain. It's a 5.5km hike up the mountain with a 655 metres (2150 feet) elevation gain, taking roughly 2 hours one-way. Weather in the mountains can be erratic so it would be a good idea to bring some water and a windbreaker or rain jacket of some sort. The energetic can hike both up and down the mountain. The less energetic might want to take the gondola one or both directions (the down direction costs $14, both directions costs $26). Beside the trailhead is the Banff Upper Hotsprings which is an excellent place to relax after the hike and clean up before dinner (cost $ 7.30 per person but there is also a discounted rate of $ 6.35 per person for groups of ten or more).

[7:30pm] Banquet at 'The Three Ravens' on the Banff Centre campus.

Late evening - beverages and snacks available in the Corbett Hall lounge.

Sunday Sept. 6th

[7am – 9am] Breakfast

[9am – 10am] **Allen Hatcher** will speak on *Madsen-Weiss for handlebody mapping class groups* in the Max Bell Room 159.

> *Abstract:* The theorem of Madsen and Weiss identifies the homology of the mapping class group of a surface, in a stable range of dimensions, with the homology of a classical object in homotopy theory. In this talk an analogous identification will be described for the mapping class group of a 3-dimensional handlebody. Here the homotopy-theoretic object is the infinite loopspace of the infinite suspension of the classifying space BSO(3) with a disjoint basepoint adjoined. The proof is an adaptation of Galatius proof of a similar theorem for the automorphism group of a free group, which involves analyzing various spaces of graphs. In the handlebody setting one is looking at 3-dimensional thickenings of graphs.

[10am – 10:30am] Tea in the Corbett Hall lounge.

[10:30am – 11:30am] **Francois Laudenbach** will speak on *Regularization of co-orientable Γ_1-structures in dimension 3* in the Max Bell Room 159.

> *Abstract:* We give a very simple proof of Thurston's regularization theorem (Annals 1976), without using the perfectness of the group of diffeomorphisms of the circle, nor Mather's homology equivalence. In particular it applies in classes of regularity where perfectness does not hold (or is not known to hold). Moreover the resulting foliation can be chosen of a precise kind, namely an "open book foliation modified by suspension."

Check-out before noon.