Since work of Gromov in the 1980’s holomorphic curves have been an essential tool in
the study of symplectic manifolds. More recently they have become a central tool in contact
gometry and low dimensional topology. The links this suggested between these subjects is
ovel and exciting. The goal of this conference was to begin the process of unifying the diverse
ways in which holomorphic curves are being used. The conference was highly successful at
bringing together a diverse group of international experts, outlining the main ways in which
holomorphic tools are currently being used, and discussing several potential approaches for
their unification and further application. The following trends were emphasized:

Legendrian Contact Homology and Invariants of Topological Knots: On this topic
Ekholm and Traynor discussing contact homology in jet spaces and Ng discussing the con-
struction of invariants of knots in $\mathbb{R}^3$ from contact homology. This approach seems to be
related to the one suggested by Ooguri and Vafa, which was outlined at the conference by
Grassi. There was much discussion of potential links between the two approaches which
we hope will stimulate further research in this area. Significant progress was also made in
building the foundation of contact homology needed for Ng’s work.

Computations and Applications of Contact Homology: Giroux and Auroux discussed
open book decompositions of contact manifolds and Lefschetz pencils of symplectic manifolds
and ways these topological objects could be used in the computation of contact homology.
Bourgeois discussed using contact homology to detect non-trivial elements in the homotopy
groups of the space of contact structures/contactomorphism group.

Heegaard Floer Homology of 3-Manifolds: On this topic we had Ozsvath discuss ap-
plications of this new invariant to contact geometry and give connections with Khovanov’s
Homology. Also, Stipsicz discussed using these invariants to answer various questions con-
cerning the types of contact structures a manifolds can support.

Embedded Contact Homology: Hutchings discussed a homologyfor mapping tori of
surfaces that is somewhat similar to contact homology but used embedded holomorphic
curves instead of immersed ones. He also described a computation he made with Sullivan of
this homology for $T^3$.

Related fields where holomorphic techniques could provide insight: Here we had many
experts describing problems that could be related to, and possibly solved by, the techniques
discussed during the workshop. Among these speakers we had: Akahori (CR geometry),
Mitsumatsu (Foliation theory), Honda (Legendrian and transverse knots) and Biran, McDuff,
and Polterovich (Lagrangian submanifolds).

During numerous discussion sessions, programs were outlined that could connect Seiberg-
Witten Theory and Heegaard Floer Homology (discussion lead by Lee) and Heegaard Floer
Homology and some enhanced form of symplectic filed theory (discussion lead by Eliashberg). There were also more informal discussions about surgery formulas for contact homology and relations with open book decompositions.

The informal atmosphere of the workshop encouraged a great deal of discussion among the participants. This lead to new collaborations (e.g. Bourgeois and Yau began work on a joint paper on contact homology of sub-critical manifolds), the continuation of ongoing collaborations (e.g. Ozbagci and Stipsicz; Eliashberg and Polterovich; Ekholm, Etnyre and Sullivan as well as a new collaboration between this group and Zhu) the solution to open problems during discussion sessions (e.g. a question of Polterovich about weakly boundary rigid tori was answered by Eliashberg) and a much better understanding of the current state of various research projects by all attendees. Many participants contributed to problem sessions. Several new very stimulating problems were formulated. They will be posted online and will undoubtedly serve as a source of new exciting results in the area.