Northern California
Symplectic Geometry Seminar
BERKELEY – DAVIS – SANTA CRUZ – STANFORD
Monday, November 7, 2005
STANFORD, Building 380, Room 383N

2:30–3:30  Ludmil Katzarkov (UC Irvine)
“Homological Mirror Symmetry and Birational Geometry”

3:30–4:00  Tea break

4:00–5:00  Helmut Hofer (NYU)
“Fredholm Theory in Polyfolds”

Abstracts
Katzarkov: In this talk we will introduce homological mirror symmetry for manifolds of
general type. We will discuss some applications to Birational Geometry and symplectic
topology.

Hofer: We describe a very general nonlinear Fredholm Theory in which ”Gromov-Witten
Theory”, ”Floer-Theory”, ”Contact Homology” and more generally ”Symplectic Field The-
ory” can be formulated in a very efficient way. In all these concrete problems ”violent”
analytical phenomena like ”Stretching the neck”, ”breaking of trajectories”, ”bubbling-
off”, ”blowing-up” are responsible for the underlying algebraic structure. It will turn out
that one needs to introduce a new kind of abstract spaces to replace Banach manifolds
or Banach orbifolds to be able to formulate and package the underlying Fredholm theory
associated to our short list of concrete theories. It turns that such a generalization is easy
and the Fredholm theory is very easy too.

There will be a dinner at 6pm

—Y. Eliashberg
D. Fuchs
V. Ginzburg
R. Montgomery
X. Tang
A. Weinstein