

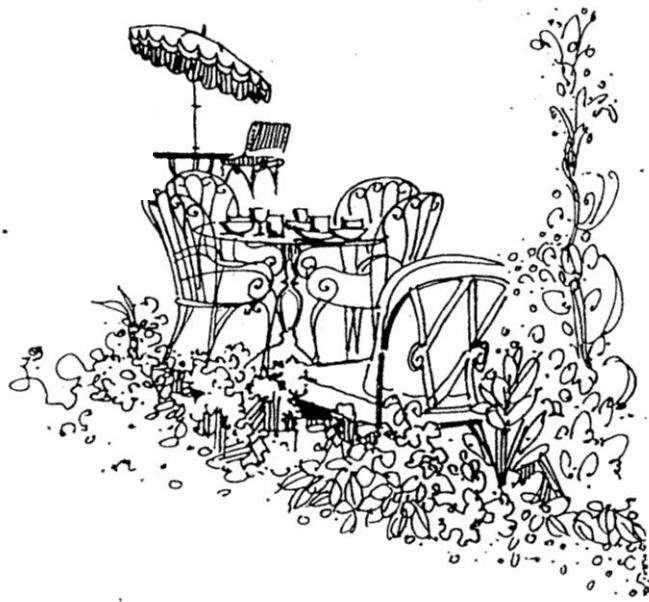
Chez Pierre

Presents ...

Monday, September 27, 2010

12:00pm

MIT Room 4-331



Anton Akhmerov

The University of Leiden, Netherlands

***“Fermion parity-protected quantum computation
with Majorana fermions”***

Majorana fermions are perhaps the simplest of the nonabelian anyons and the only ones close to experimental realization. They offer the possibility to store quantum information in a decoherence-free way using the topology of the ground state, and might therefore be an ideal building block of a quantum computer. The read out and manipulation of quantum information stored in these topological qubits requires novel strategies, which should be robust to local excitations above the ground state. We present such a strategy, based on the fact that local excitations do not change the fermion parity of the state. The key ingredient of our proposal is the Aharonov-Casher effect, which couples a flux qubit to a topological qubit in a way depending only on the fermion parity.