1041-46-61 **Marc A. Rieffel*** (rieffel@math.berkeley.edu), Department of Mathematics, University of California, Berkeley, CA 94720-3840. *Dirac operators for coadjoint orbits of compact semisimple Lie groups.* Preliminary report.

For some time I have been studying how matrix algebras converge to coadjoint orbits, in the manner used by theoretical high-energy physicists, often in a mathematically imprecise way. For the simplest case, the 2-sphere, physicists use at least 3 inequivalent Dirac operators on the corresponding matrix algebras. Physicists have not done much with Dirac operators corresponding to other coadjoint orbits. In hopes of sorting out this situation for matrix algebras, I have worked out a quite explicit global (i.e. using no local coordinates) expression for "the" Dirac operator on a coadjoint orbit of a compact semisimple Lie group. I find the picture quite rich and attractive. I will report on this. I do not need to use the structure theorem for semisimple Lie algebras. (Received July 31, 2008)