Michael Magee:
Word maps on unitary groups

For an element w in a free group, and any compact unitary group U, by substituting Haar random elements of U for the generators of the free group, and inserting into w, we obtain a random element of U. The law of this random matrix is called the w-measure on U.

A central question is what information about w can be recovered from the w-measures on compact unitary groups. With Doron Puder we proved that the w-measures on unitary groups tell us the stable commutator length of w. I'll give a full proof of this result including needed background on stable commutator length. The course will also discuss a variety of related open problems.