Alexander Berkovich* (alexb@math.ufl.edu), Mathematics Department, University of Florida, Little Hall 496, Gainesville, FL 32611. The GBG-Rank, 4-cores and 3-cores. Preliminary report. I will provide an elegant combinatorial explanation of some amazing formulas for 4-cores due to M.Hirshhorn and J. Sellers. I will discuss analogous new results for 3-cores. (Received February 01, 2009)