1145-47-370 **Victor Vinnikov*** (vinnikov@math.bgu.ac.il), P.O.B. 653, 8410501 Beer Sheva, Israel. *Rings of germs of nc functions.* Preliminary report.

The noncommutative (nc) space over a vector space $\mathcal{V}$ is the disjoint union of square matrices of all sizes over $\mathcal{V}$. This work is part of the extensive ongoing study by many authors of free nc functions, that is functions whose domain and range are subsets of nc spaces, that are graded (they preserve the matrix size), and that respect direct sums and similarities. Here, we are interested in local theory of nc functions around a given centre $Y \in \mathcal{V}^{s\times s}$, in either the algebraic setting where we consider nc functions on the "nilpotent ball" around Y, or the analytic setting where we consider germs of nc functions that are bounded in various topologies. Some of our key results are the construction of the skew field of germs of meromorphic nc functions around a scalar centre; a proof that the ring of germs of analytic nc functions around a matrix (irreducible) centre is not a domain; and a proof that the ring of nc functions on the nilpotent ball around an irreducible centre Y is the completion of the free algebra with respect to the ideal of functions vanishing at Y (which is a consequence of a Hermite type interpolation theorem for nc polynomials). This is a joint work, in progress, with Igor Klep and Jurij Volcic. (Received September 04, 2018)