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Daniel Cicala, Liron Cohen, Nachiket Karnick, Chandrika Sadanand, Michael Shulman, Amelia Tebbe* (antebbe@iu.edu) and **Dmitry Vagner**. *Applications of Cohesive Homotopy Type Theory*. Preliminary report.

In this talk, we apply Shulman's ideas from *Brouwer's Fixed-point Theorem in Real-cohesive Homotopy Type Theory* to other classical results. We consider both a 'sharp' version (i.e. selecting an exact result discontinuously) and an 'approximate' version (i.e. selecting an approximate result continuously) of the following theorems: the fundamental theorem of algebra, n -dimensional Brouwer Fixed-Point, and $2n$ -dimensional Hairy Ball. The sharp versions for each are proven, but the only approximate version proven is the fundamental theorem of algebra. However, we do give partial results, which rely on a higher dimensional Van Kampen pushout of a contractible object. Additionally, we give partial results on both sharp and approximate versions of the Borsuk-Ulam theorem via the fact that odd maps on spheres have odd degree. To this end, we investigate getting a 0-type for 2-dimensional real protective space as a homotopy colimit. We conjecture this method can be used to obtain higher dimensional real protective spaces by induction. The sharp version of Borsuk-Ulam follows from this conjecture. (Received September 26, 2017)