

We will discuss the new E1039 experiment at Fermilab to measure the single spin asymmetry of the Drell-Yan process on a transversely polarized target. This measurement can be used to determine the sign and magnitude of the Sivers asymmetry. A non-vanishing Sivers asymmetry requires a non-zero orbital angular momentum contribution of the sea quarks to the nucleon spin. This will be the first ever measurement of the Sivers asymmetry for the u -bar quark. The experiment will be a continuation of the current unpolarized SeaQuest program at Fermilab.