1080-05-94 **Joseph P.S. Kung*** (kung@unt.edu), Department of Mathematics, P.O. Box 311430, Denton, TX 76203-1430. *Is the bicycle dimension of a matrix an invariant of the field and the column matroid?* Preliminary report.

A matrix H is orthogonally dual to the matrix G if H and G have the same column set E, H is a matrix of rank $|E| - \mathrm{rank}(G)$, and if u is a row of G and v is a row of H, the inner product $\langle u, v \rangle = \sum_{e \in E} u_e v_e$ equals 0. The bicycle dimension $d(G)$ of a matrix G with column set E is the dimension of the intersection of the row space of G and the row space of H. The bicycle dimension is always 0 over a field of characteristic 0. We will discuss the question whether the bicycle dimension of G is determined by the field and the column matroid of G. (Received January 12, 2012)