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Connecting Fermion Masses and Mixings to BSM Physics – Quarks TERRENCE GOLDMAN[1], Los Alamos National Laboratory, GERARD J. STEPHENSON, JR.[2], University of New Mexico — The "democratic" mass matrix with BSM physics assumptions has been studied without success. We invert the process and use the "democratic" mass matrix plus a parametrization of all possible BSM corrections to analyze the implications of the observed masses and CKM weak interaction current mixing for the BSM parameter values for the up-quarks and down-quarks. We observe that the small mixing of the so-called "third generation" is directly related to the large mass gap from the two lighter generations. Conversely, the relatively large value of the Cabibbo angle arises because the mass matrices in the light sub-sector (block diagonalized from the full three channel problem) are neither diagonal nor degenerate and differ significantly between the up and down cases.

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