Magnetic Charge and Photon Mass[1] TIMOTHY EVANS, DOUGLAS
SINGLETON, California State University, Fresno — In this talk we study magnetic
charge in the presence of a photon mass and find very simple and physical potentials
and fields. Several properties of magnetic charge with a photon mass differ markedly
from magnetic charge with a massless photon: (i) the string singularities of the two,
usual 3-vector potentials become real singularities in the magnetic fields; (ii) the
two 3-vector potentials become gauge inequivalent and physically distinct solutions;
(iii) the magnetic field depends on the axial angle and is no longer rotationally
symmetric; (iv) a combined system of electric and magnetic charge carries a field
angular momentum even when the electric and magnetic charges are located at the
same place; (v) the usual Dirac quantization condition is altered. Given the reality
of the string singularity the only way to "hide" the string is to require a QCD-like
flux tube confinement between opposite magnetic charges *i.e.* magnetic charge, like
color charge, should always be confined.

Timothy Evans
California State University, Fresno