ABSTRACT:
The precision measurement of g and G has a measurement history that dates from the beginnings of scientific thought. And though the measurement accuracy with which we can measure g, the free-fall acceleration due to our Earth’s gravity, has improved by nearly eight orders of magnitude during the past 400 years, the accuracy with which G, the Newtonian Constant of Gravitation, is known has barely increased by three orders of magnitude during its 300 year measurement history. In this talk I will discuss what has driven (and impeded) this progress, and I will also point out how various different ideas for measuring these two quantities have come about. Finally, I will point out how some of these ideas and/or technologies have directly benefited other areas of scientific research. Throughout this talk, an important and underlying theme will be the interconnectivity and commonality of all precision measurement experiments. This talk will be both understandable and interesting for "students of all levels and ages," i.e., freshmen to senior faculty; and my hope is that some of you who would not normally attend a physics colloquium will be willing to "risk" coming to this one.

BIO:
Research interests include geophysics, experimental relativity, null experiments, precision measurements, fundamental constants, and experiments designed to look for possible invalidations of accepted physical laws at some extreme of magnitude. A new determination of G, the Newtonian constant of gravitation, was recently completed.