a large number of numbers to be determined—seventy two in the embodiment described—and they must be determined all at once, requiring at least the equivalent of a matrix inverse. A simple matrix inverse, however, is generally impossible to use since, in practice, there is never enough of the right kind of data to define a unique and tailor-made calibration for a specific installation. One of many possibilities must thus, under the invention, be found which can be expected to perform satisfactorily. Finally, the calibration input consists, in accordance with the invention, of approximately specified disturbances, with such effected while the real system inputs with respect to what is to be measured, are allowed to remain at zero.

Further modifications will also occur to those skilled in the art within the spirit and scope of the invention as defined in the appended claims. In addition to application of the several features of the invention independently or collectively to avoid the effects of inertial interference, these features, as before explained, may be applied to other types of force measurement systems, as well, including, but not limited to, weighing systems and the like.

What is claimed is:

1. A method of measuring force and/or torque to be applied to a mechanically movable or disturbable system, including where desired, objects associated therewith and portion of force measuring apparatus itself, that comprises, sensing one or more components of force and/or torque measurements uncorrected by inertial interference motion effects that arise; deriving time derivatives including at least a set of the second order derivatives of the uncorrected force measurements and subtracting the same in different combinations of each order in turn from each channel of uncorrected force measurement, with coefficients of combination chosen such that the resulting sums reflect the desired force measurements substantially free of inertial motion interference errors.

2. Apparatus for measuring force and/or torque to be applied to a mechanically movable or disturbable system, including, where desired, objects associated therewith and portions of force measuring apparatus itself, having in combination, means for sensing one or more components of force and/or torque applied to the system by forces acting thereupon to provide force and/or torque measurements uncorrected for inertial interference motion effects that arise; means for sensing lineal and/or rotational acceleration of the system in response to such inertial interference motions; and means for correcting the uncorrected force and/or torque measurements in response to the acceleration sensing to achieve elimination from the measurements of the effects of such inertial interference.

3. Apparatus as claimed in claim **2** and in which said uncorrected force measurements are made and said acceleration is sensed for all relevant degrees of freedom of motion in a plurality of respective channels, and means is provided for adding different linear combinations of the acceleration-sensing channels in turn to each channel of force measurement, with coefficients of combinations chosen such that the resulting sum reflect the desired force measurements substantially free of inertial motion interference errors.

4. Apparatus as claimed in claim **3** and in which means is provided to derive time derivatives including at least a set of the second order derivatives of the uncorrected force measurements and to enter the same in different linear combinations of each order in turn in each channel of force measurement further to correct the same.

5. Apparatus as claimed in claim **4** and in which calibration means is provided including means for intentionally moving and disturbing the system in various ways while the force ultimately to be measured is allowed to remain at zero, with means for generating a correction matrix the elements of which comprise the desired coefficients of combination to achieve the corrections of the force measurements in each channel.

6. Apparatus as claimed in claim **5** and in which means is provided for deriving the coefficients of combination for the correcting channels at the display.

7. Apparatus as claimed in claim **2** and in which the mechanically movable or disturbable system is a weighing system.

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