5007-35-104 **Maria Beatriz Pintarelli*** (`mariabeatriz.pintarelli@ing.unlp.edu.ar`), 1900 La Plata, Argentina, and **Fernando Vericat** (`vericat@iflysib.unlp.edu.ar`), , Argentina. *Partial differential equations as inverse problem of moments.*

We consider specific cases of partial differential equations of first and second order linear and non-linear, for example the Klein-Gordon equation, the Poisson equation, and equations of the form

$$a(\tau,\xi)w_{\tau}(\tau,\xi)+b(\tau,\xi)w_{\xi}(\tau,\xi)=h(\tau,\xi)w(\tau,\xi)$$

Suppose that $F(w(\tau,\xi))=0$ it is an equation in partial derivatives with solution $w^{*}(\tau,\xi)$ and boundary conditions in a region $D=(a_1,b_1)\times(a_2,b_2)$.Suppose further that $F^{*}(F_1(w(\tau,\xi)),F_2(w(\tau,\xi)))$ a vector field is such that $w^{*}(\tau,\xi)$ it is solution of $div(F^{*})=h(w)$ with h known and conversely, if $w^{*}(\tau,\xi)$ it is solution of $div(F^{*})=h(w)$ then $w^{*}(\tau,\xi)$is solution of the equation $F(w(\tau,\xi))=0$. Then find a solution to the equation $F(w(\tau,\xi))=0$, subject to boundary conditions in D is equivalent to solving a Fredholm integral equation of first kind, which in turn can be resolved as a problem of moments of bi-dimensional Hausdorff or as an inverse problem of generalized moments.We will find an approximated solution of $F(w(\tau,\xi))=0$ and bounds for the error of the estimated solution using the techniques on problem of moments. (Received May 11, 2013)