Abstract: A tokamak is a toroidal magnetic reactor that holds plasma together to enable fusion reactions to occur and produce clean energy. The simplified equation of an equilibrium of plasma in a tokamak, as treated by Demidov and Moussaoui, is given by

\[
\begin{cases}
\Delta u = au + b \geq 0 & \text{on } \Omega \subset \mathbb{R}^n, \ n \geq 2 \\
u = 0 \quad \text{and} \quad (\partial_n u = \Phi) & \text{on } \partial \Omega \in C^{1,1}
\end{cases}
\]  

where \( \Omega \) is an open bounded connected domain in \( \mathbb{R}^n \). The inverse problem is to find the values of the constants \( a \) and \( b \) from a single reading of the outer normal derivative given on the boundary, i.e. \( \partial_n u = \Phi \in L^1(\partial \Omega) \). We shall refer to \( \Phi \) as an observation, as admissible data should come from a solution generated by actual constants \( a \) and \( b \). We show that the solution is among the first eigenvalues of a family of Laplacians with a mixed boundary condition, and then show how it can be selected and computed.

All are welcome.