

ON AN EXPANSION METHOD FOR INVERTING NUMERICALLY A FIRST KIND FREDHOLM INTEGRAL EQUATION

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In this talk, we deal with the numerical inversion of the first kind Fredholm integral equation $G^*(w) = \int_0^\infty k(w, \tau)H(\tau)d\tau$, where the kernel is given by $k(w, \tau) = \frac{iw}{\tau(1 + iw\tau)}$. This inverse problem is widely known to be ill-conditioned. The complex modulus G^* is typically given as a discrete data measured experimentally in industrial Rheology context.

We use an expansion method based on a sequence of orthogonal polynomials with respect to a given weight function for computing approximations of the relaxation spectrum function H . Then numerical tests are given using the experimental data.

References

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