

Stein and Rosenberg, Perron and Frobenius

Claude Brezinski^a, Gérard Meurant^b, Michela Redivo-Zaglia^c

^a Laboratoire Paul Painlevé, Université de Lille (France)

^b CEA (France)

^c Department of Mathematics "Tullio Levi-Civita", University of Padua (Italy)

claude.brezinski@univ-lille.fr, gerard.meurant@gmail.com,

michela.redivozaglia@unipd.it

The Stein-Rosenberg theorem on the convergence of the Jacobi and Gauss-Seidel methods for solving systems of linear equations is well known. It shows that both methods are simultaneously convergent or divergent and compares their speeds of convergence. In this talk, we first remind it, discuss its proofs and its history. Its proofs are based on the Perron-Frobenius theorem on the dominant eigenvalue of a nonnegative irreducible matrix. Its genesis will also be reminded.

Then, we give a brief account of the lives and the works of Stein and Rosenberg, and those of Perron and Frobenius.

The material of this talk is issue from [1].

References

- [1] C. Brezinski, G. Meurant, M. Redivo-Zaglia, *A Journey through the History of Numerical Linear Algebra*, SIAM, Philadelphia, in press.