

Dear students in Numerical Methods (NM),

On Thursday 14/2, we went through the pages 788-790 (until Eq. 15.4.10) – basically all materials on these pages.

We then discussed what a symmetric and positive (semi-)definite matrix is (see start of section 2.9). Positive semi-definite means  $\geq 0$  and Positive definite means  $> 0$ . Cholesky-decomposition was then briefly introduced. Notice that the check: if (sum $\leq 0.0$ ) in the routine Cholesky checks for positive definiteness.

With Ole, you then worked on implementing both LU decomposition and Cholesky decomposition for two real life Linear Least Squares problems (“Pontius” and “Filip”).

On Thursday 21/2, we will prepare the further work on solving systems of linear equations by reviewing some basic linear algebra stuff. I have added some notes. Please read them carefully, and if you have difficulties with some of the concepts, search for additional material on the web (Google is your friend) or in textbooks. I will go through some of the material that is most critical and then SVD will be presented (section 2.6 until page 69 – all material there). Some of the concepts from the notes are repeated on these pages.

Ole will then go through the results with you for Pontius and Filip. Then, you will start working on solving Pontius and Filip using SVD.

BR, Henrik