1070-01-120   **Shai Simonson*** (`shai@stonehill.edu`), Shai Simonson, Professor of Computer Science, Stonehill College, 320 Washington Street, North Easton, MA 02067. *Levi ben Gershon's Matrix Algebra.* Preliminary report.

Levi ben Gershon (1288-1344), rabbi, philosopher, scientist, and mathematician, lived in Provence and was a well-known scientific figure in his day.

Levi made a number of mathematical contributions in a variety of areas. His major mathematical work Maaseh Hoshev (The Art of Calculation), 1321, is in two parts. The first part is a collection of 68 theorems and proofs in Euclidean style about arithmetic, algebra, sums, proportions, and combinatorics. The second part contains algorithms for calculation and is subdivided into six sections: addition and subtraction; multiplication; sums; combinatorics; division, square roots and cube roots; ratios and proportions. The book ends with a large number of problems illustrating the theory and algorithms.

Levi uses matrix algebra for solving certain problems appearing at the end of Maaseh Hoshev. He implicitly uses matrix algebra when he considers under-determined systems of equations derived from certain problems on proportions. Levi's solutions imply that he has ad-hoc methods to solve particular kinds of systems of n equations with n variables. However, he has no general method akin to Gaussian elimination for solving an arbitrary system of equations. We review some of these problems. (Received February 04, 2011)