**Matrix Square Roots**

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| --- | --- |
|  | Not unique (if it exists);  **Principal Square Root A1/2:**   * Exists if A has no eigenvalues on the closed negative real line [1] * Unique, with eigenvalues in the right half of the complex plane * Usually the one needed in practice |
| Schur method of Bjorck and Hammarling [2]   * The most numerically stable * Reduces A to upper triangular |  |
|  | Element dependencies: left and below  **Two methods:**   * Point * Block [3] |

**Approaches:**

|  |  |  |
| --- | --- | --- |
| A column at a time | A row at a time | A super-diagonal at a time |