

**Halko, N.; Martinsson, P. G.; Tropp, J. A.**

**Finding structure with randomness: probabilistic algorithms for constructing approximate matrix decompositions.** (English) [Zbl 1269.65043](#)

SIAM Rev. 53, No. 2, 217-288 (2011).

**MSC:**

- 65F30 Other matrix algorithms (MSC2010)
- 68W20 Randomized algorithms
- 60B20 Random matrices (probabilistic aspects)
- 65F20 Numerical solutions to overdetermined systems, pseudoinverses
- 65Y05 Parallel numerical computation
- 15B52 Random matrices (algebraic aspects)
- 62-07 Data analysis (statistics) (MSC2010)
- 68W30 Symbolic computation and algebraic computation

Cited in **6** Reviews  
Cited in **341** Documents

**Keywords:**

dimension reduction; eigenvalue decomposition; interpolative decomposition; Johnson-lindenstrauss lemma; matrix approximation; parallel algorithm; pass-efficient algorithm; principal component analysis; randomized algorithm; random matrix; rank-revealing QR factorization; singular value decomposition; streaming algorithm; numerical examples; data analysis; scientific computing; sparse input matrix; Krylov subspace methods

**Full Text:** [DOI](#)