

# A Bibliography of Publications of Andrew Knyazev

Andrew Knyazev

Associate Professor

Department of Mathematics

University of Colorado at Denver, P.O. Box 173364, Campus Box 170

Denver, CO 80217-3364

USA

Tel: +1 303 556-8102

FAX: +1 303 556-8550

E-mail: aknyazev@tiger.denver.colorado.edu (Internet)

11 May 2013

Version 1.05

## Abstract

This bibliography records publications of Andrew Knyazev.

## Title word cross-reference

**Algebra** [BdG92]. **algebraic** [Kny92a].  
**algorithm** [BK90, Kny92b]. **Algorithms** [LBA<sup>+</sup>84, Kny85, Kny86a, KLS90]. **almost** [BK92]. **analysis** [KL83]. **Applications** [Mar94]. **April** [BdG92]. **architecture** [Kny92b]. **ascent** [KS91]. **assumptions** [Kny86b]. **averaged** [BK91a].

**Belgium** [BdG92]. **boundaries** [Kny83].  
**Brussels** [BdG92].

**characteristics** [BK91a]. **coefficient** [KS89]. **coefficients** [BKK91, Kny92a].  
**compactness** [Kny86b]. **components**

[BK91b, BK94]. **composites**  
[BK91a, BK91b, BK94]. **Computation**  
[Kny85, Kny86a, BK91a, BK91b, BK94, KL83]. **Conference** [KX95]. **conjugate**  
[Kny91]. **consist** [BK91b]. **Convergence** [Kny87a, KL83, KS88, KS91].

**Decomposition** [GKM<sup>+</sup>91, KX95].  
**decompositions** [BKE94]. **derivation**  
[Kny87b]. **descent** [KS88]. **different**  
[BK91a, BK91b, BK94]. **Differential**  
[GKM<sup>+</sup>91]. **Domain**  
[GKM<sup>+</sup>91, KX95, BK94].

**effective** [BK91b]. **Efficient**  
[BK91a, BK92]. **eigenvalue**  
[Kny87a, Kny87b, KS89, KS91, Kny91, KS93b, KS93a, KS94]. **eigenvalues**  
[DK82, DK92, Kny85, Kny86a].  
**eigenvectors** [KL83, Kny85, Kny86a].  
**elliptic** [BK90]. **Engineering** [KX95].  
**Equations**

[GKM<sup>+</sup>91, BK90, BKK91, BK92]. **error** [Kny85, Kny86a, Kny86b]. **essentially** [BK91a, BK91b, BK94]. **Estimates** [KL83, Kny85, Kny86a, Kny86b, Kny87a, Kny87b, KS91, Kny94]. **euclidean** [KS88]. **exact** [KS91].

**Fictitious** [BK94, BK90]. **finding** [DK82, DK92, Kny83]. **fixed** [Kny86b]. **flow** [BK90]. **Fourth** [GKM<sup>+</sup>91].

**generalized** [KS93b, KS94]. **gradient** [Kny91, KS93b, KS94]. **gradient-type** [KS93b, KS94]. **Group** [DK82].

**highly** [BKK91]. **homogenized** [BK91b, BK94].

**IMACS** [BdG92]. **implementation** [Kny91, Kny92b]. **incompressible** [BK92]. **indefinite** [KS89]. **inequality** [BKE94]. **International** [BdG92, GKM<sup>+</sup>91, KX95]. **iteration** [KS93a]. **iterations** [Kny92b]. **Iterative** [BKK91, BK95, BdG92, Kny92a, BK90, BK92, DK82, DK92, KL83, Kny87a, KS89, KLS90, KS93b, KS94].

**Korn** [BKE94].

**Lamé** [BK92]. **Lehmann** [KLS90]. **Linear** [BdG92, Kny83, KS89]. **lower** [DK82, DK92]. **lower-order** [DK82].

**materials** [BK91a]. **Mathematical** [LBA<sup>+</sup>84]. **matrices** [BKE94, KS89]. **matrix** [Kny83]. **media** [BK92]. **mesh** [Kny86a, Kny87a]. **method** [BK90, BK92, DK82, DK92, Kny86b, KS88, KS91, Kny91]. **Methods** [BK91b, BK95, BdG92, GKM<sup>+</sup>91, KX95, Kny87b, Mar94, BKK91, BK94, KL83, Kny83, Kny87a, KS89, KLS90, KS93b, KS93a, KS94]. **multiprocessor** [Kny92b].

**norm** [KS88]. **Numerical** [Mar94].

**October** [KX95]. **optimality** [KL83]. **order** [DK82]. **orthogonal** [BKE94].

**Parallel** [LBA<sup>+</sup>84, Kny92b]. **Partial** [GKM<sup>+</sup>91, KS93b, KS94]. **PDE** [Kny92a]. **pencil** [Kny83]. **Pennsylvania** [KX95]. **periodic** [BK91a, BK91b, BK94]. **Physics** [LBA<sup>+</sup>84]. **Preconditioned** [BK95, KS89, Kny91, KS93b, KS94]. **priori** [Kny86b]. **problem** [Kny87a, Kny87b, KS91, KS93b, KS93a, KS94]. **Problems** [LBA<sup>+</sup>84, BK90, Kny86a, KS89, Kny91]. **Proceedings** [KX95, BdG92]. **properties** [BK91b, BK94].

**quotient** [KS93a].

**rate** [Kny87a, KS88, KS91]. **Rayleigh** [Kny86b, KS93a]. **ring** [Kny92b]. **Ritz** [Kny86b, Kny94].

**Science** [KX95]. **Seventh** [KX95]. **several** [KL83]. **Sharp** [Kny86b]. **sign** [Kny86b]. **simultaneous** [KL83]. **solution** [Kny92a]. **Solving** [LBA<sup>+</sup>84, BK90, BKK91, BK92, KS89]. **Some** [Kny83, LBA<sup>+</sup>84, Kny87b]. **spaces** [BKE94]. **spectrum** [Kny83]. **State** [KX95]. **Stationary** [LBA<sup>+</sup>84]. **steepest** [KS88, KS91]. **step** [Kny83]. **Stokes** [BK92]. **strongly** [Kny92a]. **structure** [BK91a, BK91b, BK94]. **Subspace** [BK95, KS89, Kny91, Kny92b, KS93b, KS94]. **symmetric** [Kny87a, Kny87b, KS91, KS93b, KS93a, KS94]. **Symposium** [BdG92, GKM<sup>+</sup>91]. **systems** [KS89].

**Temple** [KLS90]. **Temple-Lehmann** [KLS90]. **two** [Kny83]. **two-step** [Kny83]. **type** [BKE94, KS93b, KS94].

**University** [KX95].

**Variational** [KS93a]. **varying**  
 [BKK91, Kny92a]. **vectors** [Kny94].  
**version** [Kny92a].

which [BK91b]. **without** [Kny86b].

## References

- |   |  |
|---|--|
| <p>[BdG92] R. Beauwens and P. de Groen, editors. <i>Iterative Methods in Linear Algebra: proceedings of the IMACS International Symposium on Iterative Methods in Linear Algebra, Brussels, Belgium, 2–4 April, 1991</i>. Elsevier Science Publishers, Amsterdam, The Netherlands, 1992. ISBN 0-444-89248-6. LCCN QA184 .I44 1991. Proceedings IMACS Symp. Iterative Methods in Linear Algebra, Brussels, 1991.</p> | <p><b>Beauwens:1992:IML</b></p> <p>[BK92]</p>  |
| <p>[BK90] N. S. Bakhvalov and A. V. Knyazev. A new iterative algorithm for solving problems of the fictitious flow method for elliptic equations. <i>Soviet Math. Doklady</i>, 41(3):481–485, 1990.</p>   | <p><b>Bakhvalov:1990:NIA</b></p> <p>[BK94]</p>   |
| <p>[BK91a] N. S. Bakhvalov and A. V. Knyazev. Efficient computation of averaged characteristics of composites of a periodic structure of essentially different materials. <i>Soviet Math. Doklady</i>, 42(1):57–62, 1991.</p>   | <p><b>Bakhvalov:1991:ECA</b></p> <p>[BK95]</p>   |
| <p>[BK91b] N. S. Bakhvalov and A. V. Knyazev. Methods of effec-</p>   | <p>tive computation of homogenized properties for the composites with a periodic structure which consist of essentially different components. In Gury I. Marchuk, editor, <i>Computational Processes and Systems</i>, No. 8, pages 52–94. Nauka, Moscow, Russia, 1991. In Russian.</p>                     |
|   | <p><b>Bakhvalov:1992:EIM</b></p> <p>N. S. Bakhvalov and A. V. Knyazev. An efficient iterative method for solving the Lamé equations for almost incompressible media and Stokes' equations. <i>Soviet Math. Doklady</i>, 44(1):4–9, 1992.</p>   |
|   | <p><b>Bakhvalov:1994:FDM</b></p> <p>N. S. Bakhvalov and A. V. Knyazev. Fictitious domain methods and computation of homogenized properties of composites with a periodic structure of essentially different components. In Marchuk [Mar94], pages 221–276. ISBN 0-8493-8947-X. LCCN QA297 .N8619 1994.</p> |
|   | <p><b>Bakhvalov:1995:PIM</b></p> <p>N. S. Bakhvalov and A. V. Knyazev. Preconditioned iterative methods in a subspace. In Keyes and Xu [KX95], page 000. ISBN 0-8218-5171-3. LCCN QA402.2 .I55 1993.</p>   |
|   | <p><b>Bakhvalov:1994:IKT</b></p> <p>N. S. Bakhvalov, A. V. Knyazev, and M. E. Eglit. An inequality of the Korn type and orthogonal decompositions in spaces of matrices. <i>Russian Acad. Sci. Math. Doklady</i>, 48(1):127–129, 1994.</p>   |

- Bakhvalov:1991:IMSa**
- [BKK91] N. S. Bakhvalov, A. V. Knyazev, and G. M. Kobel'kov. Iterative methods for solving equations with highly varying coefficients. In Glowinski et al. [GKM<sup>+</sup>91], pages 197–205. ISBN 0-89871-278-5. LCCN QA402.2 .I57 199.
- Gyakonov:1982:GIM**
- [DK82] E. G. D'yakonov and A. V. Knyazev. Group iterative method for finding lower-order eigenvalues. *Moscow University, Ser. 15, Computational Math. and Cybernetics*, 2:32–40, 1982.
- Gyakonov:1992:IMF**
- [DK92] E. G. D'yakonov and A. V. Knyazev. On an iterative method for finding lower eigenvalues. *Russian J. of Numerical Analysis and Math. Modelling*, 7(6):473–486, 1992.
- Glowinski:1991:FIS**
- [GKM<sup>+</sup>91] Roland Glowinski, Yuri A. Kuznetsov, Gérard A. Meurant, Jacques Périaux, and Olof Widlund, editors. *Fourth International Symposium on Domain Decomposition Methods for Partial Differential Equations*. SIAM, Philadelphia, PA, USA, 1991. ISBN 0-89871-278-5. LCCN QA402.2 .I57 199.
- Knyazev:1983:ECA**
- [KL83] A. V. Knyazev and V. I. Lebedev. Estimates for convergence and analysis of the optimality of iterative methods for the simultaneous computation of several eigenvectors. In *Computational methods of linear algebra*, pages 94–114. Dept. Numerical Math. USSR Academy of Sciences, Moscow, 1983. In Russian.
- Knyazev:1990:TLM**
- [KLS90] A. V. Knyazev, V. I. Lebedev, and A. L. Skorokhodov. The Temple-Lehmann methods in iterative algorithms. *Soviet J. Numerical Analysis and Math. Modelling*, 5(4):265–273, 1990.
- Knyazev:1983:STS**
- [Kny83] A. V. Knyazev. Some two-step methods for finding the boundaries of the spectrum of a linear matrix pencil. Technical Report 3749/16, Kurchatov's Institute of Atomic Energy, Moscow, 1983. In Russian.
- Knyazev:1985:CEE**
- [Kny85] A. V. Knyazev. *Computation of eigenvalues and eigenvectors (algorithms and error estimates)*. PhD thesis, Dept. Numerical Math. USSR Academy of Sciences, Moscow, 1985. In Russian.
- Knyazev:1986:CEE**
- [Kny86a] A. V. Knyazev. *Computation of eigenvalues and eigenvectors for mesh problems: algorithms and error estimates*. Dept. Numerical Math. USSR Academy of Sciences, Moscow, 1986. In Russian.
- Knyazev:1986:SPE**
- [Kny86b] A. V. Knyazev. Sharp a priori error estimates of the Rayleigh–Ritz

- method without assumptions of fixed sign or compactness. *Math. Notes*, 38(5–6):998–1002, 1986.
- Knyazev:1987:CRE**
- [Kny87a] A. V. Knyazev. Convergence rate estimates for iterative methods for mesh symmetric eigenvalue problem. *Soviet J. Numerical Analysis and Math. Modelling*, 2(5):371–396, 1987.
- Knyazev:1987:MDS**
- [Kny87b] A. V. Knyazev. Methods for the derivation of some estimates in a symmetric eigenvalue problem. In Gury I. Marchuk, editor, *Computational Processes and Systems, No. 5*, pages 164–173. Nauka, Moscow, Russia, 1987. In Russian.
- Knyazev:1991:PCG**
- [Kny91] A. V. Knyazev. A preconditioned conjugate gradient method for eigenvalue problems and its implementation in a subspace. In *Eigenwertaufgaben in Natur- und Ingenieurwissenschaften und ihre numerische Behandlung, Oberwolfach, 1990*, volume 96 of *International Series Numerical Mathematics*, pages 143–154. Birkhäuser Verlag, Basel, 1991.
- Knyazev:1992:ISP**
- [Kny92a] A. V. Knyazev. Iterative solution of PDE with strongly varying coefficients: algebraic version. In Beauwens and de Groen [BdG92], pages 85–89. ISBN 0-444-89248-6. LCCN QA184 .I44 1991. Proceedings IMACS Symp. Iterative Methods in Linear Algebra, Brussels, 1991.
- Knyazev:1992:PAS**
- [Kny92b] A. V. Knyazev. A parallel algorithm of subspace iterations and its implementation on a multiprocessor with ring architecture. *Russian J. Numerical Analysis and Math. Modelling*, 7(1):55–61, 1992.
- Knyazev:1994:NER**
- [Kny94] A. V. Knyazev. New estimates for Ritz vectors. Technical Report 677, CIMS NYU, New York, 1994.
- Knyazev:1988:CRS**
- [KS88] A. V. Knyazev and A. L. Skorokhodov. On the convergence rate of the steepest descent method in euclidean norm. *USSR J. Comput. Math. and Math. Physics*, 28(5):195–196, 1988.
- Knyazev:1989:PIMa**
- [KS89] A. V. Knyazev and A. L. Skorokhodov. Preconditioned iterative methods in subspace for solving linear systems with indefinite coefficient matrices and eigenvalue problems. *Soviet J. Numerical Analysis and Math. Modelling*, 4(4):283–310, 1989.
- Knyazev:1991:EEC**
- [KS91] A. V. Knyazev and A. L. Skorokhodov. On exact estimates of the convergence rate of the steepest ascent method in the symmetric eigenvalue problem. *Linear Algebra and Applications*, 154–156:245–257, 1991.

- Knyazev:1993:VRQ**
- [KS93a] A. V. Knyazev and I. A. Sharapov. Variational Rayleigh quotient iteration methods for symmetric eigenvalue problem. *East-West J. of Numerical Mathematics*, 1(2):121–128, 1993.
- Knyazev:1993:PGT**
- [KS93b] A. V. Knyazev and A. L. Skorokhodov. The preconditioned gradient-type iterative methods in a subspace for partial generalized symmetric eigenvalue problem. *Soviet Math. Doklady*, 45(2):474–478, 1993.
- Knyazev:1994:PGT**
- [KS94] A. V. Knyazev and A. L. Skorokhodov. The preconditioned gradient-type iterative methods in a subspace for partial generalized symmetric eigenvalue problem. *SIAM J. Numerical Analysis*, 31(4):1226, 1994.
- Keyes:1995:DDM**
- [KX95] David E. Keyes and Jinchao Xu, editors. *Domain Decomposition Methods in Science and Engineering: Proceedings of the Seventh International Conference on Domain Decomposition, October 27–30, 1993, The Pennsylvania State University*, Contemporary Mathematics. Amer. Math. Soc., Providence, RI, USA, 1995. ISBN 0-8218-5171-3. LCCN QA402.2 .I55 1993.
- Lebedev:1984:PAS**
- [LBA<sup>+</sup>84] V. I. Lebedev, N. S. Bakhvalov, V. I. Agoshkov, O. V. Baburin,
- A. V. Knyazev, and V. P. Shutyaev. *Parallel Algorithms for Solving Some Stationary Problems of Mathematical Physics*. Dept. Numerical Math. USSR Academy of Sciences, Moscow, 1984. Foreword by G. I. Marchuk. In Russian.
- Marchuk:1994:NMA**
- Guri I. Marchuk, editor. *Numerical Methods and Applications*. CRC Press, 2000 Corporate Blvd., Boca Raton, FL 33431, USA, 1994. ISBN 0-8493-8947-X. x + 272 pp. LCCN QA297 .N8619 1994.