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Kjære Sigismund,

BULLETIN

(NEW SERIES)

of the

AMERICAN MATHEMATICAL SOCIETY

Definitioner: $\theta(x) = \sum_{p \leq x} \log p$

(2) $\theta(x) = O(x)$, $\theta(x) \sim x$ og $\theta(x) \sim x$

alltid primtall. Ellers bruker jeg at

(3) $\sum_{p \leq x} \frac{\log p}{p} = \log x + o(1)$, samt $\theta(x) = O(x)$

1. Bevis av grunnleggende formuler: La x positive og d pos. helt tall

$\theta_d = \theta_{d,x} = \sum_{d|n \leq x} \log \frac{x}{d}$

og hvis m er hel, positiv

$\theta_m = \theta_{m,x} = \sum_{m|n \leq x} \log \frac{x}{m}$

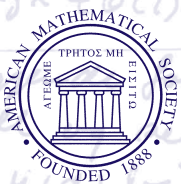
Da er

(4) $\theta_m = \begin{cases} \log p \log \frac{x}{p}, & \text{for } m \text{ potens av primtall } p. \\ \sum_{d|m} \log d \log \frac{x}{d}, & \text{for } m = p_1^{a_1} \dots p_k^{a_k} \\ 0, & \text{for alle andre } m. \end{cases}$

De 3 første deler av (4) følger umiddelbart av definisjonen, den siste del følger ved induksjon, idet vi for enkelhets skyld antar $m = p_1^{a_1} \dots p_k^{a_k}$, her er for $m = m p_i$

$\theta_{m p_i, x} = \theta_{\frac{m}{p_i}, x} - \theta_{\frac{m}{p_i}, \frac{x}{p_i}}$

Av dette følger siste del av (4) enkelt.



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BULLETIN OF THE AMERICAN MATHEMATICAL SOCIETY

CONTENTS

Vol. 45, No. 4

October 2008

ARTICLES

D. Hejhal and P. Sarnak, Some commentary on Atle Selberg's mathematics	485
Peter J. Forrester and S. Ole Warnaar, The importance of the Selberg integral	489
Maria J. Esteban, Mathieu Lewin, and Eric Séré, Variational methods in relativistic quantum mechanics	535
M. Joachim and D. J. Wraith, Exotic spheres and curvature	595

MATHEMATICAL PERSPECTIVES

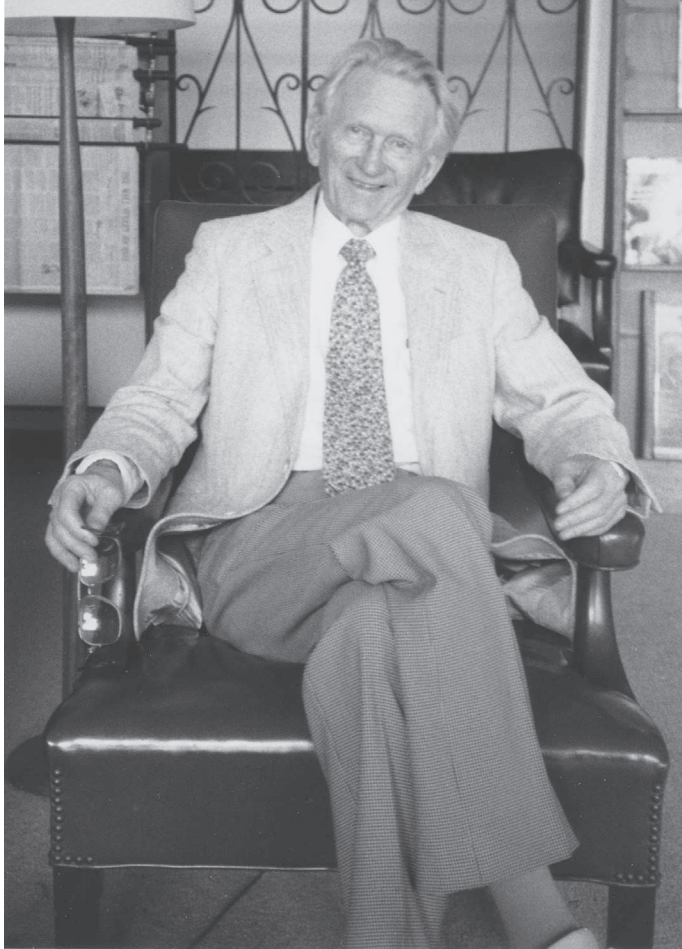
Nils A. Baas and Christian F. Skau, The lord of the numbers, Atle Selberg. On his life and mathematics	617
Selected Mathematical Reviews	651

BOOK REVIEWS

Philip Protter (Reviewer), Louis Bachelier's Theory of speculation: The origins of modern finance , by Mark Davis and Alison Etheridge	657
V. S. Varadarajan (Reviewer), Lie groups. An approach through invariants and representations , by Claudio Procesi	661
R. E. Borcherds (Reviewer), Moonshine beyond the monster: The bridge connecting algebra, modular forms and physics , by Terry Gannon	675

ERRATA

Helmut Kaul, Erratum to the review of "Minimal surfaces and functions of bounded variation"	681
---	-----



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Atle Selberg, 1917–2007
Photo, June 1, 1992, Institute for Advanced Study

INDEX TO VOLUME 45 (2008)

BULLETIN ARTICLES

- Bárány, Imre. *Random points and lattice points in convex bodies*, 339
- Dolgachev, Igor V. *Reflection groups in algebraic geometry*, 1
- Elliott, George A., and Andrew S. Toms. *Regularity properties in the classification program for separable amenable C^* -algebras*, 229
- Esteban, Maria J., Mathieu Lewin, and Eric Séré. *Variational methods in relativistic quantum mechanics*, 535
- Forrester, Peter J., and S. Ole Warnaar. *The importance of the Selberg integral*, 489
- Ghrist, Robert. *Barcodes: The persistent topology of data*, 61
- Hejhal, D., and P. Sarnak. *Some commentary on Atle Selberg's mathematics*, 485
- Joachim, M., and D. J. Wraith. *Exotic spheres and curvature*, 595
- Kaloshin, Vadim, and Mark Levi. *An example of Arnold diffusion for near-integrable Hamiltonians*, 409
- Laba, Izabella. *From harmonic analysis to arithmetic combinatorics*, 77
- Landsberg, J. M. *Geometry and the complexity of matrix multiplication*, 247
- Levi, Mark. *See* Kaloshin, Vadim
- Lewin, Mathieu. *See* Esteban, Maria J.
- Maggi, F. *Some methods for studying stability in isoperimetric type problems*, 367
- Mazur, Barry. *Finding meaning in error terms*, 185
- Sarnak, P. *See* Hejhal, D.
- Séré, Eric. *See* Esteban, Maria J.
- Stoimenow, A. *Tait's conjectures and odd crossing number amphicheiral knots*, 285
- Toms, Andrew S. *See* Elliott, George A.
- Venkatesh, Akshay. *The work of Einsiedler, Katok and Lindenstrauss on the Littlewood conjecture*, 117
- Warnaar, S. Ole. *See* Forrester, Peter J.
- Wraith, D. J. *See* Joachim, M.

MATHEMATICAL PERSPECTIVES

- Alexanderson, Gerald L. *About the cover: James Joseph Sylvester's Spring's Début*, 429
- Baas, Nils A., and Christian F. Skau. *The lord of the numbers, Atle Selberg. On his life and mathematics*, 617
- Gray, Jeremy, and Mario Micalef. *About the cover: The work of Jesse Douglas on minimal surfaces*, 293
- Lax, Peter D. *Mathematics and physics*, 135
- Micalef, Mario. *See* Gray, Jeremy
- Skau, Christian F. *See* Baas, Nils A.
- Stuhler, Ulrich, Carsten Thiel, and Stefan Wiedmann. *About the cover: Alfred Clebsch on crystallography*, 153
- Thiel, Carsten. *See* Stuhler, Ulrich
- Wiedmann, Stefan. *See* Stuhler, Ulrich

BOOK REVIEWS

- Björner, Anders, and Francesco Brenti. *Combinatorics of Coxeter groups*, reviewed by Michael W. Davis, 445
- Brenti, Francesco. *See* Björner, Anders
- Capogna, Luca, Carlos E. Kenig, and Loredana Lanzani. *Harmonic measure: Geometric and analytic points of view*, reviewed by John B. Garnett, 321
- Davis, Mark, and Alison Etheridge. *Louis Bachelier's Theory of speculation: The origins of modern finance*, reviewed by Philip Protter, 657
- Demuth, Michael, and M. Krishna. *Determining spectra in quantum theory*, reviewed by Peter D. Hislop, 469
- Dragomir, Sorin, and Giuseppe Tomassini. *Differential geometry and analysis on CR manifolds*, reviewed by John P. D'Angelo, 177
- Efrat, Ido. *Valuations, orderings and Milnor K-theory*, reviewed by Murray Marshall, 439
- Etheridge, Alison. *See* Davis, Mark

INDEX TO VOLUME 45 (2008)

- Gannon, Terry. *Moonshine beyond the monster: The bridge connecting algebra, modular forms and physics*, reviewed by R. E. Borcherds, 675
- Gesztesy, Fritz, and Helge Holden. *Soliton equations and their algebro-geometric solutions. Vol. I. $(1 + 1)$ -dimensional continuous models*, reviewed by Emma Previato, 459
- Henrot, Antoine. *Extremum problems for eigenvalues of elliptic operators*, reviewed by Leonid Friedlander, 335
- Holden, Helge. *See* Gesztesy, Fritz
- Kenig, Carlos E. *See* Capogna, Luca
- Kono, Akira, and Dai Tamaki. *Generalized cohomology*, reviewed by John R. Harper, 309
- Krishna, M. *See* Demuth, Michael
- Lam, T. Y. *Serre's problem on projective modules*, reviewed by Richard G. Swan, 451
- . *Introduction to quadratic forms over fields*, reviewed by Eva Bayer-Fluckiger, 479
- Lanzani, Loredana. *See* Capogna, Luca
- Meyer, Christian. *Modular Calabi-Yau threefolds*, reviewed by Kefeng Liu, 163
- Moreno, Carlos. *Advanced analytic number theory: L-functions*, reviewed by S. Gelbart, 169
- Procesi, Claudio. *Lie groups. An approach through invariants and representations*, reviewed by V. S. Varadarajan, 661
- Tamaki, Dai. *See* Kono, Akira
- Tomassini, Giuseppe. *See* Dragomir, Sorin
- Weiss, Richard M. *Quadrangular algebras*, reviewed by Mark A. Ronan, 315
- Zoladek, H. *The monodromy group*, reviewed by Yulij Ilyashenko, 329

ERRATA

- Kaul, Helmut. *Erratum to the review of "Minimal surfaces and functions of bounded variation"*, 681



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BULLETIN OF THE AMERICAN MATHEMATICAL SOCIETY

CONTENTS

Vol. 45, No. 1

January 2008

Articles

Igor V. Dolgachev, Reflection groups in algebraic geometry	1
Robert Ghrist, Barcodes: The persistent topology of data	61
Izabella Łaba, From harmonic analysis to arithmetic combinatorics	77
Akshay Venkatesh, The work of Einsiedler, Katok and Lindenstrauss on the Littlewood conjecture	117

Mathematical Perspectives

Peter D. Lax, Mathematics and physics	135
Ulrich Stuhler, Carsten Thiel, and Stefan Wiedmann, About the cover: Alfred Clebsch on crystallography	153
Selected Mathematical Reviews	157

Book Reviews

Kefeng Liu (Reviewer), Modular Calabi-Yau threefolds , by Christian Meyer	163
S. Gelbart (Reviewer), Advanced analytic number theory: L-functions , by Carlos Moreno	169
John P. D'Angelo (Reviewer), Differential geometry and analysis on CR manifolds , by Sorin Dragomir and Giuseppe Tomassini	177

Vol. 45, No. 2

April 2008

Articles

Barry Mazur, Finding meaning in error terms	185
George A. Elliott and Andrew S. Toms, Regularity properties in the classification program for separable amenable C*-algebras	229
J. M. Landsberg, Geometry and the complexity of matrix multiplication	247
A. Stoimenow, Tait's conjectures and odd crossing number amphicheiral knots	285

Mathematical Perspectives

Jeremy Gray and Mario Micalef, About the cover: The work of Jesse Douglas on minimal surfaces	293
Selected Mathematical Reviews	303

Book Reviews

John R. Harper (Reviewer), Generalized cohomology , by Akira Kono and Dai Tamaki	309
--	-----

Mark A. Ronan (Reviewer), Quadrangular algebras , by Richard M. Weiss	315
John B. Garnett (Reviewer), Harmonic measure: Geometric and analytic points of view , by Luca Capogna, Carlos E. Kenig, and Loredana Lanzani	321
Yulij Ilyashenko (Reviewer), The monodromy group , by H. Zoladek	329
Leonid Friedlander (Reviewer), Extremum problems for eigenvalues of elliptic operators , by Antoine Henrot	335

Vol. 45, No. 3

July 2008

Articles

Imre Bárány , Random points and lattice points in convex bodies	339
F. Maggi , Some methods for studying stability in isoperimetric type problems	367
Vadim Kaloshin and Mark Levi , An example of Arnold diffusion for near-integrable Hamiltonians	409

Mathematical Perspectives

Gerald L. Alexanderson , About the cover: James Joseph Sylvester's <i>Spring's Début</i>	429
Selected Mathematical Reviews	435

Book Reviews

Murray Marshall (Reviewer), Valuations, orderings and Milnor K-theory , by Ido Efrat	439
Michael W. Davis (Reviewer), Combinatorics of Coxeter groups , by Anders Björner and Francesco Brenti	445
Richard G. Swan (Reviewer), Serre's problem on projective modules , by T. Y. Lam	451
Emma Previato (Reviewer), Soliton equations and their algebro-geometric solutions. Vol. I. (1 + 1)-dimensional continuous models , by Fritz Gesztesy and Helge Holden	459
Peter D. Hislop (Reviewer), Determining spectra in quantum theory , by Michael Demuth and M. Krishna	469
Eva Bayer-Fluckiger (Reviewer), Introduction to quadratic forms over fields , by T. Y. Lam	479

Vol. 45, No. 4

October 2008

Articles

D. Hejhal and P. Sarnak , Some commentary on Atle Selberg's mathematics	485
--	-----

Peter J. Forrester and S. Ole Warnaar , The importance of the Selberg integral	489
Maria J. Esteban, Mathieu Lewin, and Eric Séré , Variational methods in relativistic quantum mechanics	535
M. Joachim and D. J. Wraith , Exotic spheres and curvature	595

Mathematical Perspectives

Nils A. Baas and Christian F. Skau , The lord of the numbers, Atle Selberg. On his life and mathematics	617
Selected Mathematical Reviews	651

Book Reviews

Philip Protter (Reviewer), Louis Bachelier’s Theory of speculation: The origins of modern finance , by Mark Davis and Alison Etheridge	657
V. S. Varadarajan (Reviewer), Lie groups. An approach through invariants and representations , by Claudio Procesi	661
R. E. Borcherds (Reviewer), Moonshine beyond the monster: The bridge connecting algebra, modular forms and physics , by Terry Gannon	675

Errata

Helmut Kaul , Erratum to the review of “Minimal surfaces and functions of bounded variation”	681
---	-----

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BULLETIN OF THE AMERICAN MATHEMATICAL SOCIETY
CONTENTS

Vol. 45, No. 4

October 2008

ARTICLES

- D. Hejhal and P. Sarnak**, Some commentary on Atle Selberg’s mathematics 485
- Peter J. Forrester and S. Ole Warnaar**, The importance of the Selberg integral 489
- Maria J. Esteban, Mathieu Lewin, and Eric Séré**, Variational methods in relativistic quantum mechanics 535
- M. Joachim and D. J. Wraith**, Exotic spheres and curvature 595

MATHEMATICAL PERSPECTIVES

- Nils A. Baas and Christian F. Skau**, The lord of the numbers, Atle Selberg. On his life and mathematics 617
- Selected Mathematical Reviews 651

BOOK REVIEWS

- Philip Protter** (Reviewer), Louis Bachelier’s Theory of speculation: The origins of modern finance, by Mark Davis and Alison Etheridge 657
- V. S. Varadarajan** (Reviewer), Lie groups. An approach through invariants and representations, by Claudio Procesi 661
- R. E. Borcherds** (Reviewer), Moonshine beyond the monster: The bridge connecting algebra, modular forms and physics, by Terry Gannon 675

ERRATA

- Helmut Kaul**, Erratum to the review of “Minimal surfaces and functions of bounded variation” 681



0273-0979(200810)45:4*;1-R