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PROFESSOR HARI MOHAN SRIVASTAVA

(Born : July 05, 1940)

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PROFESSOR HARI MOHAN SRIVASTAVA : A TOWERING AND TOPMOST LEADING MATHEMATICIAN

By
R.C. Singh Chandel
Executive Editor: Jñānābha , Founder Secretary: Vijñāna Parishad of India
D.V. Postgraduate College, Orai-285001, Uttar Pradesh, India
Email: rc_chandel@yahoo.com
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On behalf of **Vijñāna Parishad of India** and **Jñānābha** Family, we ourselve feel great honored to publish Special Issue of *Jñānābha* , Vol. **50(1)** 2020 (Dedicated to Honor Professor H.M. Srivastava on His 80th Birth Anniversary Celebrations).

Professor Hari Mohan Srivastava is an amazing man, towering and leading mathematician, well known topmost eminent figure of Special Functions and Allied Topics Mathematical Analysis. He is topmost Researcher, Supervisor of several *Ph.D.* and *D.Sc.* theses, well reputed University Teacher, Editor or Member on Editorial Boards of various International Journals, Reviewer of various Reviews, Elected Fellows of various International Societies, Recipient of International Prizes, Awards, Honors, Author of various Internationally prescribed Text Books having Special Dedication Volumes/ Dedication Issues (and/ or Dedication Messages) of International Scientific Research Journals.

He has credit to be associated initially with *Jñānābha* , Vol.1, 1971 as an active member on its Editorial Board with me (as Editor). Since 1972, he is continuously giving his Dedicated Services as Foreign Secretary of Vijñāna Parishad of India and gracing the Chair of Chief Editor : Jñānābha with me (as Founder Secretary of VPI and Executive Editor : *Jñānābha*).

He was elected and Honored as one of the first two Honorary Fellows of Vijñāna Parishad of India *(FVPI)* with Professor J. N. Kanpur during Silver Jubilee Conference of VPI held at Parishad Head Quarters: D. V. Postgraduate College, Orai-285001, UP, India (May 10-11, 1996).

We published Jñānābha , Vol. **31/32**, 2002 Dedicated to Honor Professor H.M. Srivastava on his 62nd Birthday Celebrations. While Jñānābha , Vol. 45,2015 was Dedicated to Honor Professor H. M. Srivastava on His Platinum Jubilee Celebrations.

18th Annual Cum 1st International Conference of VPI was Dedicated to Honor Professor H. M. Srivastava on His Platinum Jubilee Celebrations held at MANIT, Bhopal. MP, India on December 11-14, 2015.

Professor H. M. Srivastava was also Honored by **LIFE-LONG ACHIVEMENTS AWARD, the Highest Prestigious** Award of VPI for his Outstanding Contribution to His Subject and Life-Time Distinguished Services Dedicated to **Vijñāna Parishad of India**, its Journal **JÑĀNĀBHA and/or to Nation/ World Development** at the Occasion of 20th Annual Conference of VPI held at Manipal University, Jaipur, India on November 24-26, 2017 in his absentia.

The Mathematics community has been very privileged to have Professor Srivastava as its guiding force, leader and a great mentor. He has been a role model and an inspiration to every mathematician and countless people, whose life Professor Srivastava has touched. His work has taken Mathematics to new heights and helped researchers accomplish goals that could have never been dreamed of before.

On this great occasion of Professor Srivastava's Birth Anniversary Celebrations, we wish him a happy, healthy, and long joyful life. May he continue to guide, encourage, and enlighten the global Mathematics community for decades to come.

At a Glance

Professor Hari Mohan Srivastava (H. M. Srivastava)
Ph.D., D.Sc. (h.c), D.Sc. (h.c.)
2006-*Present : Professor Emeritus*
1974–2006: Full Professor
1969–1974: Associate Professor
Department of Mathematics and Statistics,
University of Victoria,
Victoria, British Columbia, V8W 2Y2 Canada
1959–1969: Assistant Professor/Reader/Lecturer in Universities in India *and* U.S.A.
E-Mail: harimsri@math.uvic.ca
Date of Birth: July 5, 1940
Place of Birth: Karon (District Ballia), Uttar Pradesh, India

Education:
B.Sc. 1957 University of Allahabad, India
M.Sc. 1959 University of Allahabad, India
Ph.D. 1965 J. N. Vyas University of Jodhpur, India
D.Sc. (*Honoris Causa*) 2006 Chung Yuan Christian University, Taiwan, Republic of China
D.Sc. (*Honoris Causa*) 2007 "1 Decembrie 1918" University of Alba Iulia, Romania

Professional Qualifications and Recognitions:
F.R.A.S. 1968 Royal Astronomical Society (London, U.K.)
F.N.A.Sc. 1969 National Academy of Sciences (India)
F.I.M.A. 1975 Institute of Mathematics and Its Applications (U.K.)
F.M.R.A.S. 1991 The Royal Academy of Sciences, Literature and Fine Arts (Belgium)
C.Math. 1991 Institute of Mathematics and Its Applications (U.K.)
F.V.P.I. 1996 Vijñāna Parishad (Science Academy) of India
F.A.A.A.S. 1996 American Association for the Advancement of Science (U.S.A.)
F.A.A.C. 1998 La Academia Canaria de Ciencias (Spain)
F.F.A. 1999 Forum d'Analystes (India)
C.Sc. 2005 Institute of Mathematics and Its Applications (U.K.)
D.Sc. (*h.c.*) 2006 Chung Yuan Christian University (Taiwan, Republic of China)
F.M.A.S.A. 2007 The Macedonian Academy of Sciences and Arts (Macedonia)
D.Sc. (*h.c.*) 2007 "1 Decembrie 1918" University of Alba Iulia (Romania)
F.F.R.A.S. 2016 The Royal Academy of Sciences (Spain)

2004: NSERC 25-Year Award (Canada)

2004: Nishiwaki Prize (Japan)

2012: Listed in the Second Place among *Canada's Top Researchers* in the discipline of Mathematics and Statistics in Terms of Productivity and Impact Based Upon a Measure of Citations to Their Published Works (*The Globe and Mail*, Toronto, March 27, 2012, Page B7 *et seq.*)

***2020: Obada Prize for Distinguished Researcher* (Egypt)**

2015–Present: Thomson Reuters Highly Cited Researcher

Special Volumes and Special Issues of (and/or Dedication Messages in) International Scientific Research Journals Dedicated to his 60th, 62nd, 70th, 75th and 80th Birth Anniversaries:

These include (*to quote only a few*) ***Fractional Calculus and Applied Analysis*** **(Volume 3, Number 3, 2000; Volume 13, Number 3, 2010; Volume 13, Number 4, 2010),** ***Applied Mathematics and Computation*** **(Volume 187, Number 1, 2007; Volume 218, Number 3, 2011)**, and so on. Moreover, the following **880-page** Springer volume may be cited here:

***Analytic Number Theory, Approximation Theory, and Special Functions*:**
In Honor of Hari M. Srivastava
(xi + 880 pp.; ISBN 978-1-4939-0257-1) (Gradimir V. Milovanović and Michael Th. Rassias, Editors), Springer, Berlin, Heidelberg and New York, 2014.

Professor Srivastava began his **university-level** teaching career in 1959 itself at the age of 19 years. Currently, Professor Srivastava holds the position of a **Professor Emeritus** in the Department of Mathematics and Statistics at the University of Victoria in Canada. He joined the faculty there in 1969 [first as Associate Professor (1969–1974) and then as Full Professor (1974–2006)]. Professor Srivastava has held (and/or currently holding) numerous positions of *Visiting Professor* **and** *Chair Professor* including (for example) those at West Virginia University in U. S. A. (1967–1969), Université Laval in Canada (1975), and the University of Glasgow in U. K. (1975–1976), and indeed also at many other universities and research institutes in different parts of the world.

Professor Srivastava has published 33 books, monographs and edited volumes, 36 book (and encyclopedia) chapters, 48 papers in international conference proceedings, and **more than 1,300** scientific research journal articles on various topics of mathematical analysis and applicable mathematics. In addition, he has written Forewords to several books by other authors and to several special issues of scientific journals. He has also edited (and contributed to) many volumes which are dedicated to the memories of famous mathematical scientists. Citations of his research contributions can be found in many books and monographs, *Ph.D.* and *D.Sc.* theses, and scientific journal articles, much too numerous to be recorded here. Currently, he is actively associated editorially (that is, as an Editor, Honorary Editor, Editor-in-Chief, Senior Editor, Associate Editor or Editorial Board Member) with **over 200** international scientific research journals. His biographical sketches (many of which are illustrated with his photograph) have appeared in various issues of more than 50 international biographies, directories, and ***Who's Who's***.

Professor Srivastava's **over 60-year career** as a **university-level** teacher and as a remarkably prolific researcher in many different areas of the mathematical, physical, and statistical sciences is highlighted by (among other things) the fact that he has collaborated and published joint papers with as many as **650** mathematicians, physicists, statisticians, chemists, astrophysicists, geochemists, as well as information and business management scientists, who are scattered throughout the world, thereby qualifying for his **Erdös number** 2, implying that at least one of Professor Srivastava's co-authors is a co-author of the famous Hungarian mathematician, Paul Erdös (1913–1996). Professor Srivastava's collaboration distances with other famous scientists include his **Einstein number** 3, **Pólya number** 3, **von Neumann number** 3, **Wiles number** 3, and so on.

Outline of Research Contributions:

Many mathematical entities and objects are attributed to (and named after) him. These entities and objects include (among other items) Srivastava's polynomials and functions, Carlitz-Srivastava polynomials, Srivastava-Buschman polynomials, Srivastava-Singhal polynomials, Chan-Chyan-Srivastava polynomials, Erkuş-Srivastava polynomials, Srivastava-Daoust multivariable hypergeometric function, Srivastava-Panda multivariable H-function, Singhal-Srivastava generating function, Srivastava-Agarwal *basic* (or q-) generating function, and Wu-Srivastava inequality in the field of Higher Transcendental Functions; Srivastava-Owa, Choi-Saigo-Srivastava, Jung-Kim-Srivastava, Liu-Srivastava, Cho-Kwon-Srivastava, Dziok-Srivastava, Srivastava-Attiya, Srivastava-Wright and Srivastava-Gaboury operators in the field of Geometric Function Theory in Complex Analysis; Srivastava-Gupta operator in the field of Approximation Theory; Srivastava, Adamchik-Srivastava and Choi-Srivastava constants and methods in the field of Analytic Number Theory; **and so on.**

Professor Srivastava has supervised (and is currently supervising) a number of post-graduate students working toward their Master's, *Ph.D.* and/or *D.Sc.* degrees in different parts of the world. Besides, many post-doctoral fellows and research associates have worked with him at West Virginia University in U.S.A. and at the University of Victoria in Canada.

Some of the significant and remarkable contributions by Professor Srivastava are being listed below under each of the **main** topics of his **current** research interests:

(i) Real and Complex Analysis: A unified theory of numerous potentially useful function classes, and of various integral and convolution operators using hypergeometric functions, especially in Geometric Function Theory in Complex Analysis, and several classes of analytic and geometric inequalities in the field of Real Analysis.

(ii) Fractional Calculus and Its Applications: Generalizations of such classical fractional-calculus operators as the Riemann-Liouville and Weyl operators together with their fruitful applications to numerous families of differential, integral, and integro-differential equations, especially some general classes of fractional kinetic equations and also to some Volterra-type integro-differential equations which emerge from the unsaturated behavior of the free electron laser.

(iii) Integral Equations and Transforms: Explicit solutions of several general families of dual series and integral equations occurring in Potential Theory; Unified theory of many known generalizations of the classical Laplace transform (such as the Meijer and Varma transforms) and of other multiple integral transforms by means of the Whittaker $W_{\kappa,\mu}$-function and the (Srivastava-Panda) multivariable H-function in their kernels.

(iv) Higher Transcendental Functions and Their Applications: Discovery, introduction, and systematic (and unified) investigation of a set of **205** triple Gaussian hypergeometric series, especially the triple hypergeometric functions H_A, H_B and H_C added to the 14-member set conjectured and defined in 1893 by Giuseppe Lauricella (1867–1913). Unified theory and applications of the multivariable extensions of the celebrated higher transcendental (Ψ- and H-) functions of Charles Fox (1897–1977) and Edward Maitland Wright (1906–2005), and also of the Mittag-Leffler E-functions which are named after Gustav Mittag-Leffler (1846–1927). Mention should be made also of his applications of some of these Higher Transcendental Functions in Quantum and Fluid Mechanics, Astrophysics, Probability Distribution Theory, Queuing Theory

and other related Stochastic Processes, and so on.

(v) q-Series and q-Polynomials: Basic theory of general q-polynomial expansions for functions of several complex variables, extensions of several celebrated q-identities of Srinivasa Ramanujan (1887–1920), and systematic introduction and investigation of multivariable basic (or q-) hypergeometric series.

(vi) Analytic Number Theory: Presentation of several computationally-friendly and rapidly-converging series representations for Riemann's Zeta function, Dirichlet's L-series, introduction and application of some novel techniques for closed-form evaluations of series involving a wide variety of sequences and functions of analytic number theory, and so on. His applications of (especially) the Hurwitz-Lerch Zeta function in Geometric Function Theory in Complex Analysis and in Probability Distribution Theory and related topics of Statistical Sciences deserve to be recorded here.

(vii) Analytic and Geometric Inequalities: Unified presentations and generalizations of a number of analytic and geometric inequalities.

(viii) Probability and Statistics: Probabilistic derivations of generating functions and statistical applications of various special functions and orthogonal polynomials.

(ix) Inventory Modelling and Optimization: Systematic analytical investigation of many potentially useful problems in supply chain management.

Professor Srivastava's publications have been reviewed by (among others) **Mathematical Reviews** (U.S.A.), **Referativnyi Zhurnal Matematika** (Russia), **Zentralblatt für Mathematik** (Germany), and **Applied Mechanics Reviews** (U.S.A.) under various **2010** ***Mathematical Subject Classifications*** (**MathSciNet**) including (for example) the following general classifications:

00 General
01 History and Biography
05 Combinatorics
11 Number Theory
15 Linear and Multilinear Algebra; Matrix Theory
26 Real Functions
30 Functions of a Complex Variable
31 Potential Theory
33 Special Functions
34 Ordinary Differential Equations
35 Partial Differential Equations
39 Difference and Functional Equations
40 Sequences, Series, Summability
41 Approximations and Expansions
42 Fourier Analysis
44 Integral Transforms, Operational Calculus
45 Integral Equations
46 Functional Analysis
47 Operator Theory
51 Geometry
58 General Global Analysis, Analysis on Manifolds

60 Probability Theory and Stochastic Processes
62 Statistics
65 Numerical Analysis
70 Mechanics of Particles and Systems
76 Fluid Mechanics
81 Quantum Theory
85 Astronomy and Astrophysics
90 Operations Research, Mathematical Programming
91 Game Theory, Economics, Social and Behavioral Sciences

Publications (Selected and the Most Recent):

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associated with fractional q-calculus operators, Miskolc Math. Notes 20 (2019), 1245–1260.
• H. M. Srivastava, H. Günerhan and B. Ghanbari, Exact traveling wave solutions for resonance nonlinear Schrdinger equation with intermodal dispersions and the Kerr law nonlinearity, Math. Methods Appl. Sci. 42 (2019), 7210–7221.
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Profile Details: Further details about Professor Srivastava's professional achievements and accomplishments [**as well as** the lists of his **most recent publications** including Refereed Journal Articles; Books, Monographs and Edited Volumes; Book Chapters; Encyclopedia Chapters; Papers in Conference Proceedings; Forewords to Books and Journals (including Preface, Editorial, *et cetera*)] can be found at the following Web Site:

URL: http://www.math.uvic.ca/~harimsri/

Telephone: 1-250-472-5313 (Office); 1-250-477-6960 (Home)
FAX: 1-250-721-8962
E-Mail: harimsri@math.uvic.ca

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