Miklos Gyulassy Curriculum Vitae:
updated 7/18/2017

I. PERSONAL DATA

Name:	Miklos Gyulassy
Birthdate:	March 9, 1949, Szolnok, Hungary
Citizenship:	United States, naturalized 7/24/64 San Francisco
Work Address:	Physics Department, Columbia University 538 West 120th, New York, NY 10027 and Nuclear Science Division Lawrence Berkeley National Lab Cell phone 914-715-7695

II. EDUCATION AND AWARDS

A. Undergraduate

1. 1966-1970 University of California at Berkeley
   Received B.A. degree (physics major) June 1970 with
   "Great Distinction in General Scholarship"

B. Graduate

1970-1974 University of California at Berkeley
Ph.D. in physics awarded December 1974

C. Professional Awards

1. Alexander von Humboldt Senior U.S. Scientist Award 1986
2. E. O. Lawrence Memorial Award 1987
3. Fellow of the American Physical Society 1990
4. Elected Foreign Member of the Hungarian Academy of Science 1998
5. Tom W. Bonner Prize in Nuclear Physics 2015 of the American Physical Society
6. 2015 Hungarian Government Order of Merit Officer's Cross
7. Bian Peng Chair Visiting Professor at Central China Normal University, Wuhan China 9/24/2015-2020
8. Professor Emeritus of Physics at Columbia University 1/1/2016

III. RESEARCH EXPERIENCE

1974-1976 Post Doctoral Research Assistant

	University of Frankfurt Robert Mayer Strasse 6 Frankfurt/M. 1 West Germany supervisor: Prof. W.Greiner
1976-1978	Post Doctoral Research Associate Nuclear Theory Group Lawrence Berkeley Laboratory supervisor: Dr. N.K.Glendenning
1978-1981	Nuclear Science Divisional Fellow Lawrence Berkeley Laboratory
1981-1992	Senior Staff Scientist Nuclear Science Division Lawrence Berkeley Laboratory
1993-2015	Full Professor of Physics Physics Department Columbia University New York, N.Y. 10027
2016-	Professor Emeritus of Physics, Columbia University, NY, and affiliated with the Nuclear Science Division, LBNL, Berkeley CA, the Central China Normal University, Wuhan, China , and the Wigner Research Centre for Physics Budapest, Hungary.

IV. PROFESSIONAL ACTIVITIES

- Co-chairman of organizing committee for "First Workshop on Ultra-Relativistic Nuclear Collisions" at LBL 1979
- VENUS planning and proposal Committee 1979, 1980
- DOE nuclear theory review committee 1980,1981
- Participant in DOE Nuclear Science Advisory Committee (NSAC) Long Range Plan SubCommittee 1983
- TEVALAC planning committee 1983

- Program Advisory Committee of AGS at Brookhaven National Lab 1984-1987
- Bevalac Executive Committee 1985
- Co-chairman of "Quark Matter '86" conference Asilomar 1986
- Member of Nuclear Science Advisory Committee (NSAC) of DOE and NSF 1986-1990
- Member of AUI Review Committee of Brookhaven National Lab (BNL), 1987-1991
- Co-Chairman of Spring Course of the IEE, Madrid, Spain, May 1988, on Relativistic Nuclear Collisions
- Bevalac Program Advisory Committee LBNL, 1988-1992
- Member of International Advisory Committee, Journal of Physics G,1989-2006
- Nuclear Physics Program Advisory Committee, SLAC, 1989-1991
- Member of the Physical Review C Editorial Board, 1989-1995
- Member of Institute of Nuclear Theory (INT) Advisory Committee (Univ.Washington), 1990-1992
- Co-organizer of the IIIrd INT workshop, Oct 1990- Jan 1991, UW
- Member of Quark Matter 91 Organizing Commitee, 1991
- Scientific Director of Nuclear Theory, LBL, 1991-1992
- Editorial Board of Heavy Ion Physics, Acta Physica Hungarica, 1994-
- Member of NSAC Long Range Plan 1995 subcommittee
- Co-organizer of INT-96-3 Program on Ultra-Relativistic Nuclear Collision 9/16-12/6/96, UW
- Organizer of RIKEN/BNL Center Workshop on Open Systems Approach to Parton Cascade, 6/23-27/97, BNL
- Organizer of RIKEN/BNL Center Symposium on NonEquilibrium Dynamics, 9/23-27/97, 1997

- Organizer of RIKEN/BNL Center Workshop of Color Conductivity, Instantonics and Parity Violation in AA, Nov, 11, 1997
- Co-organizer of QM99 RHIC Predictions , Torino, May 14,1999
- Riken-BNL-Research Center (RBRC) Advisory Board Member, 1997-
- American Physical Society /DNP Program Committee member 1998-1999
- BNL/RHIC Program Advisory Comm. (PAC) member 1998-2006
- Co-organizer of RIKEN BNL Research Center Workshop on New Discoveries at RHIC: The Current Case for the Strongly Interactive QGP, Brookhaven, Upton, New York, 14-15 May 2004.
- Co-organizer of Jet Correlations at RHIC, RBRC-BNL,March 10-11, 2005
- Member, Int. Advisory Comm. of Quark Matter 2005-present
- Organizer of AdS/CFT Strings Intersect Nuclear Beams at Columbia, 2007, 2009, 2011, Columbia University
- Coorganizer of Jet Quenching at RHIC vs LHC in Light of Recent dAu vs pPb Controls, RBRC , BNL, LI April 15-17, 2013
- Chair of Zimanyi Nuclear Theory Award selection comm, 2010-present

V. RESEARCH INTERESTS

My research concentrates on the theory of ultra-dense matter and quark-gluon plasmas, nonlinear field theoretic models of confinement, the nuclear equation of state and nuclear phase transitions, the theory and phenomenology of high energy inelastic interactions involving nuclear targets, including relativistic hydrodynamics, transport theory, and holographic gravity dual models inspired by string theory. Theoretical problems at the interface between nuclear and particle physics involve calculations of the evolution of the energy and baryon densities, high pT jet quenching and tomography and holography, the space-time development of hadronization from partons, and the competition between hadronic and quark-gluon degrees of freedom,

equilibrium and non-equilibrium dynamical effects on the experimental observables in such reactions at RHIC and LHC.

I work on understanding of the QCD many body problem from perturbative and effective field theory points of view, of formal relativistic transport theory and relativistic hydrodynamics, and of application of AdS/CFT gravity dual holography methods to strongly interacting many body phenomena.

In our paper (Nucl.Phys.A750:30-63,2005 with L. McLerran) we summarized the theoretical and experimental evidence from the first four years of RHIC operation and concluded that two new forms of strongly interacting matter were discovered in heavy ion experiments at RHIC/BNL: (1) the sQGP, the so called the strongly interacting Quark Gluon Plasma and (2) the CGC, the so called the Color Glass Condensate. Since 2011 more recent data on $p + Pb$ at LHC/CERN and the Beam Eenergy Scan at RHIC/BNL have posed new questions as to the relative magnitude of collective "perfect fluid" *hydrodynamic effects* (with viscosity to entropy ratio close to the quantum uncertainty bound) and strong QCD chromo *field interference effects*. Our work (Phys.Rev. D90 (2014) 054025 with P. Levai, I.Vitev, T. Biro) on QCD beam jet bremsstrahlung in p+A suggests that the perfect fluidity property of the sQGP observed in A+A may not be dominant in p+A and p+p. We are currently studying with Wigner Istitute colleagues in Budapest the sensitivity of "barometric" azimuthal flow harmonics, $v_n(p_T)$, signatures of perfect fluidity to initial state color wave interference phenomena using a new C++ grneralization our HIJING A+A event generator framework with X.N. Wang (Phys. Rev. D **44**, 3501 (1991 with X.N. and Phys. Rev. Lett. **68**, 1480 (1992)).

Our work on jet tomography (JHEP 1408 (2014) 063 with J.Xu and A. Buzzatti and Chin.Phys.Lett. 32 (2015) 9, 092501 and JHEP 1602 (2016) 169 with J.Xu and J.Liao has generalized our previous DGLV opacity series theory by including possible non-perturbative semi-QGP and emergent color magnetic monopole degress of freedom near the QCD confinement cross over temperature region. In addition we can now compute numerically jet-medium interactions in more realistic 2+1D viscous hydrodynamic evolution of inhomogeneous sQGMP fluids Our new CUJET4.0 sQGMP+perfect fluid framework explains consistently both soft and hard sector observables in A+A at both RHIC and LHC.

However, in a parallel effort employing a combination of perturbative QCD based jet-medium coupled to event by event viscous fluid model (PRL116 (2016) 252301 with J. Noronha-Hostler et al) we found an equally good account for present data. We are now working on identifying future observables to discriminate between such competing soft+hard dynamical models.

VI. Research Funding

Department of Energy Research Grant, Office of Nuclear Science,
supported this work under grant DE-FG02-93ER40764 beween 1993-2015.
This grant terminated on 12/15/15 upon the retirement of the PI.

VII Bibliography from inspirehep.net as of 8/17/2017:
330 papers (270 citable published or arXiv)
with Total citations 20,705 and Index $h_{hep} = 70$

Citations summary

Generated on 2017-08-18

330 papers found, 270 of them citeable (published or arXiv)

Citation summary results	Citeable papers	Published only
Total number of papers analyzed:	270	224
Total number of citations:	20,705	19,670
Average citations per paper:	76.7	87.8
Breakdown of papers by citations:		
Renowned papers (500+)	8	8
Famous papers (250-499)	13	12
Very well-known papers (100-249)	31	29
Well-known papers (50-99)	40	38
Known papers (10-49)	95	85
Less known papers (1-9)	65	43
Unknown papers (0)	18	9
h_{HEP} index [?]	70	68

Figure 1: Citation summary as of 8/18/17. See complete list of 270 citable publications since 1974 online on inspirehep.net.

VIIa. Top 8 cited ($>$ 500) **"Renowned" papers from inspirehep.net**

1. **"HIJING: A Monte Carlo model for multiple jet production in p p, p A and A A collisions"**
   X. -N. Wang and M. Gyulassy.
   Phys. Rev. D **44**, 3501 (1991).
   http://inspirehep.net/record/318107HEP entry
   1378 citations counted in INSPIRE

2. **"New forms of QCD matter discovered at RHIC"**
   M. Gyulassy and L. McLerran.
   Nucl. Phys. A **750**, 30 (2005)
   http://inspirehep.net/record/649862HEP entry
   945 citations counted in INSPIRE

3. **"Gluon shadowing and jet quenching in A + A collisions at s**(1/2) = 200-GeV"**
   X. -N. Wang and M. Gyulassy.
   Phys. Rev. Lett. **68**, 1480 (1992).
   http://inspirehep.net/record/31298HEP entry
   747 citations counted in INSPIRE

4. **"HIJING 1.0: A Monte Carlo program for parton and particle production in high-energy hadronic and nuclear collisions"**
   M. Gyulassy and X. -N. Wang.
   Comput. Phys. Commun. **83**, 307 (1994) [nucl-th/9502021]
   http://inspirehep.net/record/382687HEP entry
   713 citations counted in INSPIRE

5. **"Multiple collisions and induced gluon Bremsstrahlung in QCD"**
   M. Gyulassy and X. -n. Wang.
   Nucl. Phys. B **420**, 583 (1994) [nucl-th/9306003]
   http://inspirehep.net/record/354874HEP entry
   662 citations counted in INSPIRE

6. **"Reaction operator approach to nonAbelian energy loss"**
   M. Gyulassy, P. Levai and I. Vitev.
   Nucl. Phys. B **594**, 371 (2001) [nucl-th/0006010]

http://inspirehep.net/record/528435HEP entry
662 citations counted in INSPIRE

7. **"Jet Quenching in Dense Matter"**
   M. Gyulassy and M. Plumer,
   Phys. Lett. B **243**, 432 (1990).
   571 citations counted in INSPIRE

8. **"Pion Interferometry of Nuclear Collisions. 1. Theory"**
   M. Gyulassy, S. K. Kauffmann and L. W. Wilson,
   Phys. Rev. C **20**, 2267 (1979).
   512 citations counted in INSPIRE as of 18 Aug 2017

VIIb. 13 Top cited $(250 - 499)$ **"Famous papers" from inspirehep.net**

1. S. Wicks, W. Horowitz, M. Djordjevic and M. Gyulassy,
   "Elastic, inelastic, and path length fluctuations in jet tomography"
   Nucl. Phys. A **784**, 426 (2007) [nucl-th/0512076].
   489 citations counted in INSPIRE as of 18 Aug 2017

2. M. Gyulassy, P. Levai and I. Vitev,
   "NonAbelian energy loss at finite opacity,"
   Phys. Rev. Lett. **85**, 5535 (2000) [nucl-th/0005032].
   482 citations counted in INSPIRE

3. M. Gyulassy, I. Vitev, X. N. Wang and B. W. Zhang,
   "Jet quenching and radiative energy loss in dense nuclear matter,"
   In *Hwa, R.C. (ed.) et al.: Quark gluon plasma* 123-191 [nucl-th/0302077].
   460 citations counted in INSPIRE

4. P. Danielewicz and M. Gyulassy,
   "Dissipative Phenomena in Quark Gluon Plasmas,"
   Phys. Rev. D **31**, 53 (1985).
   398 citations counted in INSPIRE

5. I. Vitev and M. Gyulassy,
   "High p_T tomography of d + Au and Au+Au at SPS, RHIC, and LHC,"
   Phys. Rev. Lett. **89**, 252301 (2002) [hep-ph/0209161].
   356 citations counted in INSPIRE

6. M. Gyulassy, I. Vitev and X. N. Wang,
"High p(T) azimuthal asymmetry in noncentral A+A at RHIC,"
Phys. Rev. Lett. **86**, 2537 (2001) [nucl-th/0012092].
353 citations counted in INSPIRE

7. D. Molnar and M. Gyulassy,
"Saturation of elliptic flow and the transport opacity of the gluon plasma at RHIC,"
Nucl. Phys. A **697**, 495 (2002); Erratum **703**, 893 (2002)
349 citations counted in INSPIRE

8. N. Armesto, N. Borghini, S. Jeon, U. A. Wiedemann, S. Abreu, V. Akkelin, J. Alam and J. L. Albacete *et al.*,
"Heavy Ion Collisions at the LHC - Last Call for Predictions,"
J. Phys. G **35**, 054001 (2008) [arXiv:0711.0974 [hep-ph]].
320 citations counted in INSPIRE

9. X. N. Wang, M. Gyulassy and M. Plumer,
"The LPM effect in QCD and radiative energy loss in a quark gluon plasma,"
Phys. Rev. D **51**, 3436 (1995) [hep-ph/9408344].
310 citations counted in INSPIRE

10. T. Hirano and M. Gyulassy,
"Perfect fluidity of the quark gluon plasma core as seen through its dissipative hadronic corona,"
Nucl. Phys. A **769**, 71 (2006) [nucl-th/0506049].
292 citations counted in INSPIRE

11. D. H. Rischke and M. Gyulassy,
"The Time delay signature of quark - gluon plasma formation in relativistic nuclear collisions,"
Nucl. Phys. A **608**, 479 (1996) [nucl-th/9606039].
284 citations counted in INSPIRE

12. M. H. Thoma and M. Gyulassy,
"Quark Damping and Energy Loss in the High Temperature QCD,"
Nucl. Phys. B **351**, 491 (1991).
270 citations counted in INSPIRE

13. M. Gyulassy, P. Levai and I. Vitev,
"Jet quenching in thin quark gluon plasmas. 1. Formalism,"

Nucl. Phys. B **571**, 197 (2000) [hep-ph/9907461].
256 citations counted in INSPIRE

VIIc. Recent papers during the 2015-2017 period from inspire-hep.net sorted by decending arXive date order

1. J. L. Albacete *et al.*,
"Predictions for p+Pb Collisions at $\sqrt{s_{NN}} = 8.16$ TeV,"
arXiv:1707.09973 [hep-ph].

2. S. Shi, J. Xu, J. Liao and M. Gyulassy,
"A Unified Description for Comprehensive Sets of Jet Energy Loss Observables with CUJET3,"
arXiv:1704.04577 [hep-ph].

3. G. G. Barnafldi *et al.*,
"First Results with HIJING++ in High-Energy Heavy-Ion Collisions,"
arXiv:1701.08496 [hep-ph].

4. B. Betz, M. Gyulassy, M. Luzum, J. Noronha, J. Noronha-Hostler, I. Portillo and C. Ratti,
"Cumulants and nonlinear response of high p_T harmonic flow at $\sqrt{s_{NN}} = 5.02$ TeV,"
Phys. Rev. C **95**, no. 4, 044901 (2017) [arXiv:1609.05171 [nucl-th]].

5. J. L. Albacete *et al.*,
"Predictions for p+Pb Collisions at $\sqrt{s_{NN}} = 5$ TeV: Comparison with Data,"
Int. J. Mod. Phys. E **25**, no. 9, 1630005 (2016) [arXiv:1605.09479 [hep-ph]].

6. B. Betz and M. Gyulassy,
"The effect of transverse flow on the nuclear modification factor at RHIC and LHC,"
AIP Conf. Proc. **1701**, 060006 (2016). doi:10.1063/1.4938669

7. J. Noronha-Hostler, B. Betz, J. Noronha and M. Gyulassy,
Phys. Rev. Lett. **116**, no. 25, 252301 (2016) [arXiv:1602.03788 [nucl-th]].

8. B. Betz, F. Senzel, C. Greiner and M. Gyulassy,
"The impact of the medium and the jet-medium coupling on jet measurements at RHIC and LHC,"
arXiv:1512.07443 [hep-ph].

9. J. Xu, J. Liao and M. Gyulassy,
"Long wavelength perfect fluidity from short distance jet transport in quarkgluon plasmas,"
Nucl. Phys. A **956**, 617 (2016) [arXiv:1512.07137 [nucl-th]].

10. J. Noronha-Hostler, J. Noronha and M. Gyulassy,
"The unreasonable effectiveness of hydrodynamics in heavy ion collisions,"
Nucl. Phys. A **956**, 890 (2016) [arXiv:1512.07135 [nucl-th]].

11. B. Betz, F. Senzel, C. Greiner and M. Gyulassy,
"Constraints on the Jet-Medium Coupling from Measurements at RHIC and LHC," arXiv:1509.00965 [hep-ph].

12. J. Noronha-Hostler, J. Noronha and M. Gyulassy,
"Sensitivity of flow harmonics to subnucleon scale fluctuations in heavy ion collisions,"
Phys. Rev. C **93**, no. 2, 024909 (2016) [arXiv:1508.02455 [nucl-th]].

13. J. Xu, J. Liao and M. Gyulassy,
"Bridging Soft-Hard Transport Properties of Quark-Gluon Plasmas with CUJET3.0,"
JHEP **1602**, 169 (2016) [arXiv:1508.00552 [hep-ph]].

14. A. Esposito and M. Gyulassy,
"Hadronization scheme dependence of long-range azimuthal harmonics in high energy p + A reactions,"
Phys. Lett. B **747**, 433 (2015) [arXiv:1505.03734 [hep-ph]].

15. B. Betz and M. Gyulassy,
"Sensitivity of Pion versus Parton-Jet Nuclear Modification Factors to the Path-Length Dependence of Jet-Energy Loss at RHIC and LHC,"
Chin. Phys. Lett. **32**, no. 12, 121204 (2015) [arXiv:1503.07671 [hep-ph]].