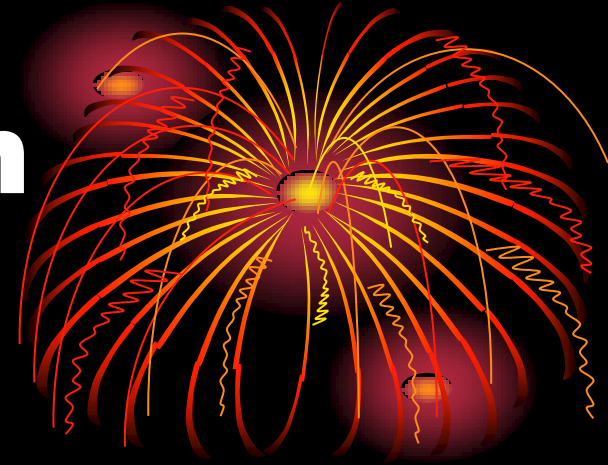


Collaborating with Takeshi Kodama



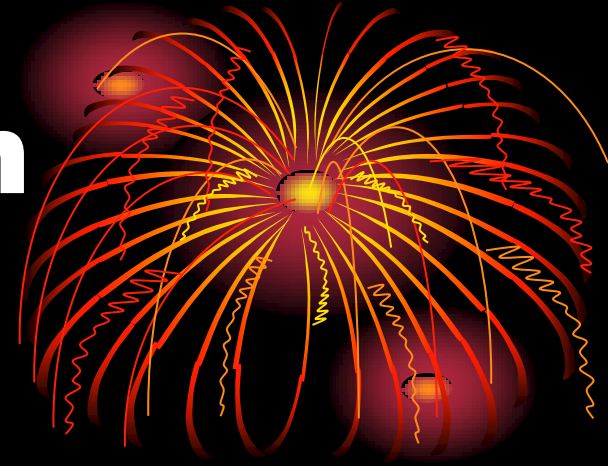
RANP 2013
September/2013
Rio de Janeiro



Y. Hama

I would like to thank Wei-Liang Qian and Sandra Padula for editing the presentation

Collaborating with Takeshi Kodama

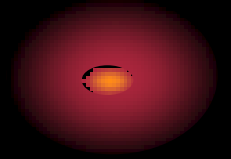


RANP 2013
September/2013
Rio de Janeiro



Y. Hama

After the **Study at Waseda University in Tokyo**,
came to **CBPF, Rio de Janeiro**,
within **Brasil-Japan Collaboration**
in **1972**.



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came to **CBPF, Rio de Janeiro**,
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in **1972**.



Good training



After the **Study at Waseda University in Tokyo**,
came to **CBPF, Rio de Janeiro**,
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Good training (also everyday now)



After the **Study at Waseda University in Tokyo**,
came to **CBPF, Rio de Janeiro**,
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in **1972**.

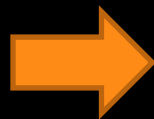


Good training (also everyday now)

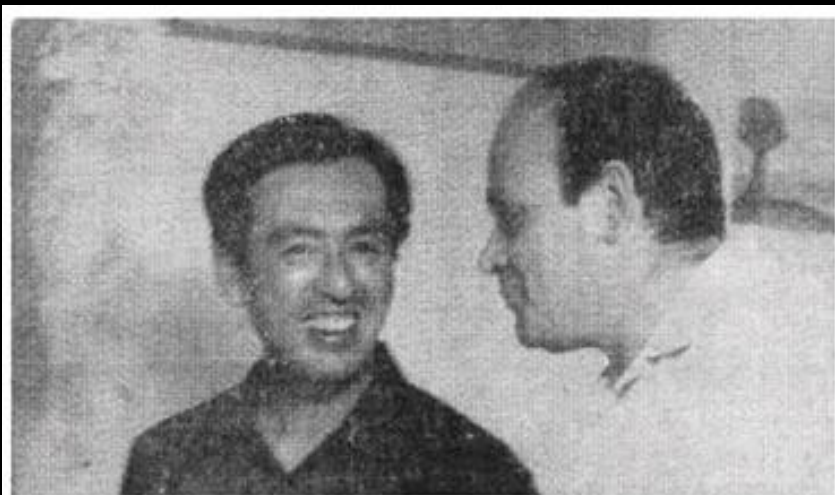


Wide knowledge in physics

**After the Study at Waseda University in Tokyo,
came to CBPF, Rio de Janeiro,
within Brasil-Japan Collaboration
in 1972.**



**After the Study at Waseda University in Tokyo,
came to CBPF, Rio de Janeiro,
within Brasil-Japan Collaboration
in 1972.**



Lattes com o prof. Yoichi Fujimoto, um dos líderes japoneses da Colaboração Brasil-Japão. Inteligente, bem humorado, negociador habilidoso, excepcional capacidade de trabalho, visitou o Brasil numerosas vezes dentro da Colaboração, prestando sempre valiosa contribuição.

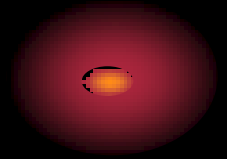


**Recommended by Prof. Y. Fujimoto,
invited by Prof. C. Lattes and Prof. A. Marques**

In harmony, he quickly adapted himself to local customs.



In harmony, he quickly adapted himself to local customs.



In harmony, he quickly adapted himself to local customs.



This ability and generosity to accept people of different origins and customs, without losing his spirit of samurai, made him an excellent collaborator.

Rio – São Paulo Collaboration

Preliminary



**PhD thesis supervision of
Paulo Pascholati**



**Espectro retardado de raios beta em fragmentos de
fissão do ^{235}U (1973)**

Rio – São Paulo Collaboration

Preliminary

Collaboration with

Diógenes Galetti and Maria Carolina Nemes



D. Galetti, T. Kodama, M.C. Nemes, A QED description of relativistic Coulomb excitation in heavy ion collisions, Annals Phys. 177 (1987) 229.

M.C. Nemes, T. Kodama, D. Galetti, Finite- p_T contribution to relativistic Coulomb excitation: A possible explanation for the clean-fission puzzle, Phys. Rev. Let. 59 (1987) 443.

Rio – São Paulo Collaboration

First meeting with Takeshi



One day in 1988, he appeared in my office, bringing a manuscript on Coulomb excitation.

- There were some discrepancy between their results and the data.
- For me, the data have not been obtained correctly, because the increase in hadronic cross-section has not been considered.

T. Kodama, S.B. Duarte, A.N.F. Aleixo, M.F. Barroso, R. Donangelo, C.E. Aguiar, Does the nuclear heavy-ion cross section stay constant at ultra-relativistic energies?, Nucl. Phys. A 523 (1991) 640.

Rio – São Paulo Collaboration

First meeting with Takeshi



We also discussed in that occasion necessity to make a joint project on high-energy heavy-ion physics between Rio de Janeiro and São Paulo, gathering all the people who were working on this topic, some of them having independent international contacts.

- One of the activities we wanted to include in the project was periodic workshops of the group (~twice a year), where every participant, comprising students, could talk about what he is doing.**

This series of meeting has been called, following Fernando Navarra, RETINHA (Hadron Physics Workshop).

This is one of many meetings Takeshi participated in the organization.

Rio – São Paulo Collaboration

RETINHA

(Workshop on Hadron Physics)



1st. meeting

- **Date: 02-04/May/1990**
- **Local: IF-USP***
- **Participants: 18**

*chosen for financial reasons:

No money in São Paulo for locomotion

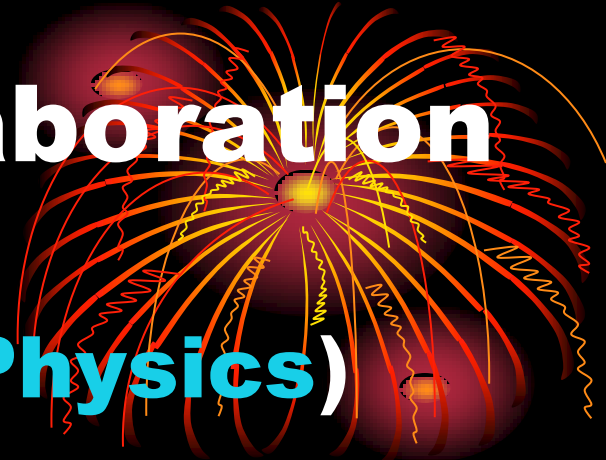
PARTICIPANTES

Rui A. M. S. Nazareth (IF-UFRJ)
Gerson Baso Costamilan (IME)
Dirceu A. Portes (Bolsista Mestrado, CNPq)
Gerson Pech (Bolsista Doutorado, CNPq)
Takeshi Kodama (CBPF)
K. C. Chung (CBPF)
Bruto Max Pimentel Escobar (IFT-UNESP)
Diógenes Galetti (IFT-UNESP)
Sandra dos Santos Padula (Bolsista Pós Doutorado, CNPq)
Audrey Moreira (Bolsista Mestrado, CNPq)
Mirian Bracco (Bolsista Doutorado, FAPESP)
Nelmar Arbex (Bolsista Iniciação, CAPES)
Engelbert Quack (Bolsista Doutorado, DAAD)
Milton Pereira Isidro Filho (Bolsista Pós Doutorado, FAPESP)
M.Carolina Nemes (IF-USP)
Fernando Silveira Navarra (IF-USP)
Marina Nilsen (IF-USP)
Yogiro Hama (IF-USP)

Rio – São Paulo Collaboration

RETINHA

(Workshop on Hadron Physics)



Last meeting

- **Date: 03-05/DEC/2012**
- **Local: CBPF-RJ**
- **Participants: 39**



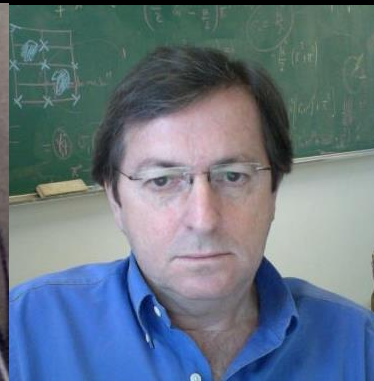
Fernando Navarra



Sérgio D. Duarte



**In memoriam
Kai Cheong Chung**



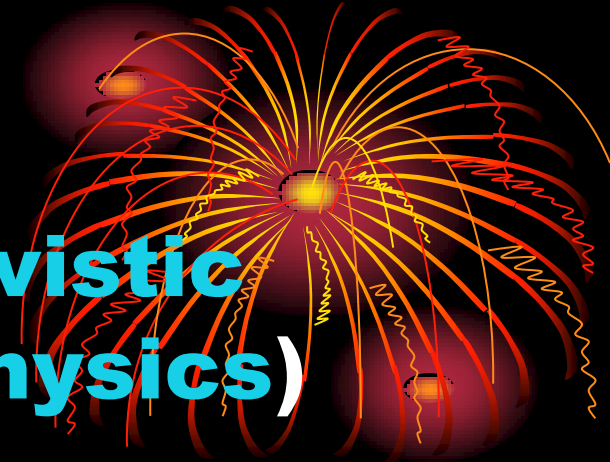
Gastão I. Krein



Marina Nielsen

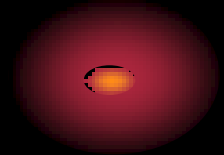
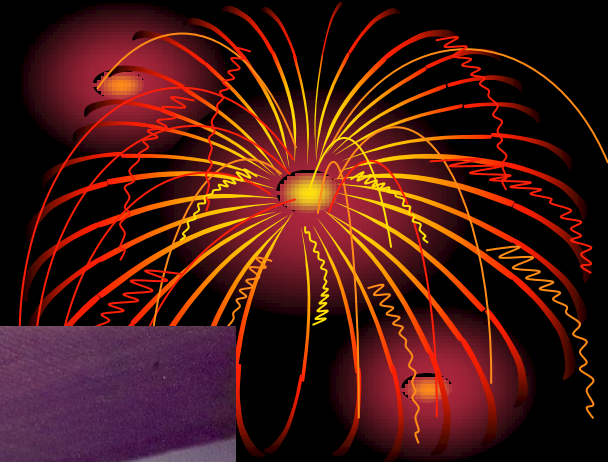
RANP

(workshop on Relativistic Aspects of Nuclear Physics)



- **Another type of meeting we have had, with participation of the Collaboration we initiated, is precisely the present one – RANP**
- **RANP has been initiated by Takeshi in 1999, soon after IUPAP meeting in Nuclear Physics in São Paulo.**
- **The main object of this series of meetings has been to give our young researchers opportunity to participate in scientific discussions with top-level physicists in the area. This has been one of the main preoccupations of Takeshi.**

RANP



These workshops gave opportunities of new collaborations with foreign researches

Rio – São Paulo Collaboration

1990 - 2000

- **Hyperon polarization in $p + A \rightarrow Y(\bar{Y}) + X$**
- **Decoupling in hydrodynamics**
Cooper Frye \rightarrow Continuous Emission
Further development has been done
by Laszlo Csenai
and also by Yuri Sinyukov



Rio – São Paulo Collaboration

1990 - 2000



- **Fluctuations in the initial conditions**

We studied effects of initial condition fluctuations using IGM (interacting gluon model), applying to p+p collisions.



Rio – São Paulo Collaboration 1990 - 2000



- **HBT in sonoluminescence**
Takeshi has been studying sonoluminescence, with Jan Rafelski and Hans-Thomas Elze. We studied HBT effect for this.
- **Variational formulation of hydrodynamics**



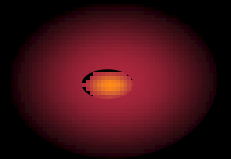


Carlos Eduardo Aguiar



Rio – São Paulo Collaboration

1990 - 2000



Rio – São Paulo Collaboration



Publications (1990-2000)

- **Y. Hama, T. Kodama, Hyperon polarization in a hydrodynamical model, Phys. Rev. D48 (1993) 3116.**
- **F. Grassi, Y. Hama, T. Kodama, Continuous particle emission - a probe of thermalized matter evolution?, Phys. Let. B 355 (1995) 9.**
- **F. Grassi, Y. Hama, T. Kodama, Particle emission in the hydrodynamical description of relativistic nuclear collisions, Z. Phys. C73 (1996) 153.**
- **M.F. Barroso, T. Kodama, Y. Hama, Reaction cross section in ultrarelativistic nuclear collisions, Phys. Rev. C53 (1996) 501.**
- **F. Grassi, Y. Hama, T. Kodama, O. Socolowski Jr., Comparing particle emission scenarios in hydrodynamics: continuous emission vs. freeze out, Heavy Ion Phys. 5 (1997) 953.**
- **S. Paiva, T. Kodama, Y. Hama, Fluctuation effects in initial conditions for hydrodynamics, Phys. Rev. C55 (1997) 1455.**
- **Y. Hama, T. Kodama, S. Paiva, Fluctuations in hadronic and nuclear collisions, Found. Phys. 27 (1997) 1601.**
- **Y. Hama, T. Kodama, S.S. Padula, Hanbury-Brown-Twiss interferometry for sonoluminescence bubble, Phys. Ver. A56 (1997) 2233.**
- **T. Kodama, Y. Hama, H.T. Elze, M. Makler, J. Rafelski, Variational principle for the relativistic fluid dynamics, Heavy Ion Phys. 10 (1999) 275.**
- **H.T. Elze, Y. Hama, T. Kodama, M. Makler, J. Rafelski, Variational principle for relativistic fluid dynamics, J. Phys. G25 (1999) 1935.**
- **V.K. Magas, C. Anderlik, L. Csernai, F. Grassi, W. Greiner, Y. Hama, T. Kodama, Z.I. Lázár, H. Stöcker, Large pt enhancement from freeze out, Phys. Let. B459 (1999) 33.**
- **C. Anderlik, L. Csernai, F. Grassi, W. Greiner, Y. Hama, T. Kodama, Z.I. Lázár, V.K. Magas, H. Stöcker, Freeze-out in hydrodynamical models, Phys. Rev. C59 (1999) 3309.**
- **V.K. Magas, T. Kodama, C. Anderlik, L. Csernai, Z.I. Lázár, F. Grassi, W. Greiner, Y. Hama, H. Stöcker, Non-equilibrium effects in relativistic hydrodynamics, Heavy Ion Phys. 14 (2001) 239.**

Rio – São Paulo Collaboration

SPheRIO

- **Takeshi Osada, some time after his arrival, wanted to make a hydrodynamical code, in order to allow more realistic computations.**
- **Takeshi and C.E. Aguiar, who new SPH method, suggested to use this algorithm.**
- **With Collaboration of Klaus Werner, who disposed their event generator NEXUS, we could start more realistic study of IC fluctuations.**



Takeshi Osada



Carlos Eduardo Aguiar



Klaus Werner

Rio – São Paulo Collaboration

SPheRIO



- **Takeshi kodama**
- **Carlos Eduardo Aguiar**
- **Bernardo M. Tavares**
- **Gabriel S. Denicol**
- **Licínio Portugal**
- **Philipe Mota**
- **Tomoi Koide**
- **Takeshi Osada**
- **Frédérique Grassi**
- **Otávio Socolowski Jr.**
- **Rone P.G. Andrade**
- **Sandra S. Padula**
- **Wei-Liang Qian**
- **Fernando G. Gardim**
- **Yogiro Hama**

Rio – São Paulo Collaboration

SPheRIO



Rio – São Paulo Collaboration

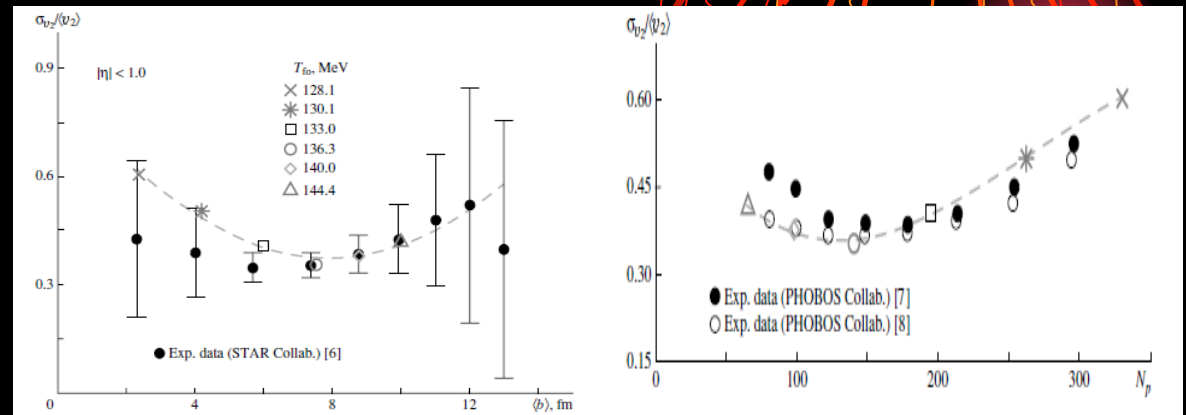
SPheRIO



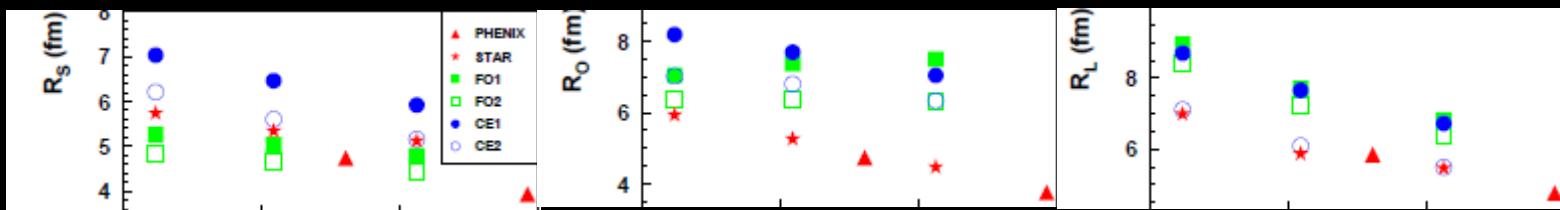
Rio – São Paulo Collaboration

SPheRIO

Fluctuations of v_2



Effects of fluctuations on HBT radii



Effect of fluctuations on v_2

Ridge in hydrodynamic model

Rio – São Paulo Collaboration

SPheRIO



Publications (2006-2013)

- **R. Andrade, F. Grassi, T. Kodama, O. Socolowski Jr., Y. Hama, Examining the necessity to include event-by-event fluctuations in experimental evaluations of elliptical flow, Phys. Rev. Let. 97 (2006) 202302.**
- **R. Andrade, T. Kodama, F. Grassi, Y. Hama, O. Socolowski Jr, B.M. Tavares, NeXSPheRIO results on elliptic flow at RHIC and connection with thermalization, Eur. Phys. J. A29 (2006) 23.**
- **Y. Hama, T. Kodama, R. Andrade, F. Grassi, O. Socolowski Jr, B.M. Tavares, S.S. Padula, 3D relativistic hydrodynamic computations using lattice-QCD-inspired equations of state, Nucl. Phys. A774 (2006) 169.**
- **W.L. Qian, R. Andrade, F. Grassi, O. Socolowski Jr, T. Kodama, Y. Hama, Effect of chemical freeze out on identified particle spectra at 200-A-GeV Au-Au, Int. J. Mod. Phys. E16 (2007) 1877.**
- **R. Andrade, F. Grassi, Y.Hama, T. Kodama, Comparison of hydrodynamical and experimental estimates of elliptical flow, Int. J. of Mod. Phys. E16 (2007) 1806.**
- **Y. Hama, C.E. Aguiar, T. Kodama, T. Osada, F. Grassi, W.L. Qian, R. Andrade, NeXSPheRIO results on elliptic-flow fluctuations at RHIC, Phys. Atom. Nucl. 71 (2008) 1558.**
- **R. Andrade, T. Kodama, F. Grassi, Y. Hama, W.L. Qian, Importance of granular structure in the initial conditions for the elliptic flow, Phys. Rev. Let. 101 (2008) 112301.**
- **J. Takahashi, B. Tavares, W.L. Qian, R. Andrade, F. Grassi, Y. Hama, T. Kodama, N. Xu, Topology studies of hydrodynamics using two-particle correlation analysis, Phys. Rev. Let. 103 (2009) 242301.**
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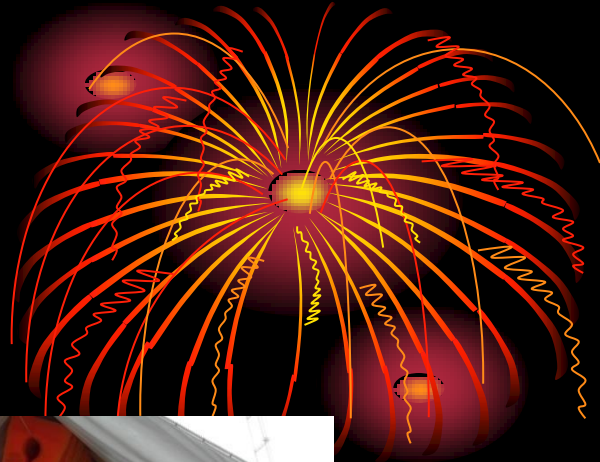
Rio – São Paulo Collaboration

SPheRIO



Publications (2001-2005)

- C.E. Aguiar, T. Kodama, T. Osada, Y. Hama, Smoothed particle hydrodynamics for relativistic heavy-ion collisions, *J. Phys. G27* (2001) 75.
- T. Kodama, C.E. Aguiar, Y. Hama, T. Osada, Entropy-based relativistic smoothed particle hydrodynamics, *J. Phys. G27* (2001) 557.
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- M. Gazdzicki, M. Gorenstein, F. Grassi, Y. Hama, T. Kodama, O. Socolowski Jr., Incident-energy dependence of the effective temperature in heavy-ion collisions. *Braz. J. Phys. 34* (2004) 322.
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- O. Socolowski Jr., T. Kodama, F. Grassi, Y. Hama, Fluctuations of the initial conditions and the continuous emission in the hydrodynamical description of two-pion interferometry, *Phys. Rev. Let. 93* (2004) 182301.
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- F. Grassi, T. Kodama, O. Socolowski Jr., Y. Hama, Results on transverse mass spectra obtained with NeXSPheRIO. *J. Phys. G31* (2005) S1041.
- Y. Hama, T. Kodama, O. Socolowski Jr., Topics on hydrodynamic model of nucleus-nucleus collisions, *Braz. J. Phys. 35* (2005) 24.



Some of his good qualities are:

Quickly adaptability to local customs



- **Ability to collaborate with anybody**



**good
y**

