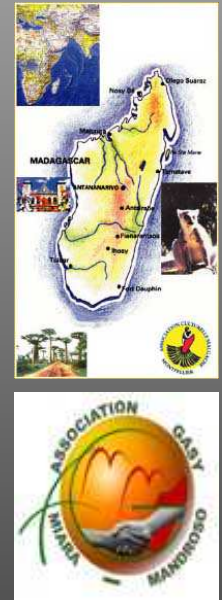


Pioneering High-Energy Physics in Madagascar



Stephan Narison

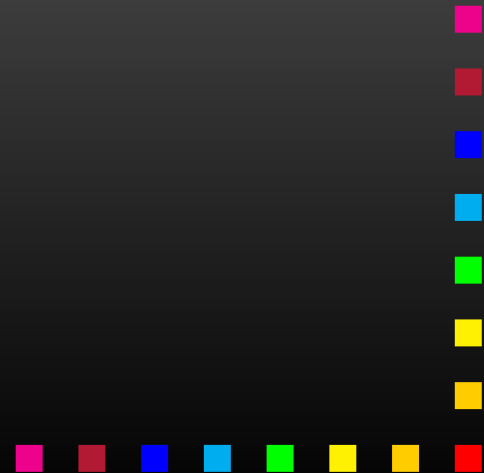
IN2P3 / CNRS (LPTA-Montpellier)



Contents

- Why HEP in Madagascar ?
- HEP-MAD Series of Conferences
- HEP-MAD Research Institute
- HEP-MAD students
- International cooperations
- Popularizing HEP & LHC
- Benefits for Madagascar
- Needs for further developments

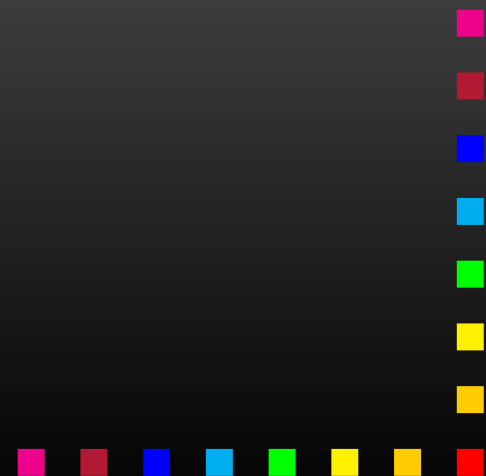
Why HEP in Madagascar ?



Why HEP in Madagascar ?



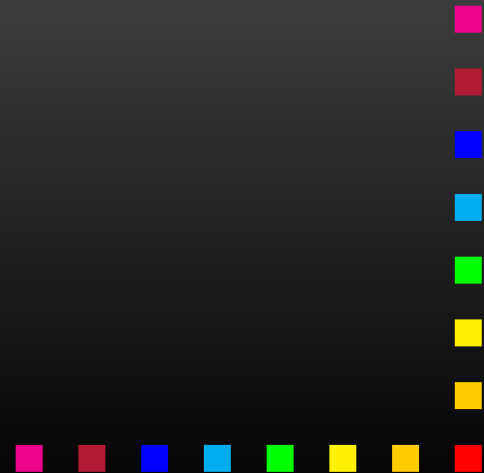
- Universality of Scientific Knowledge



Why HEP in Madagascar ?



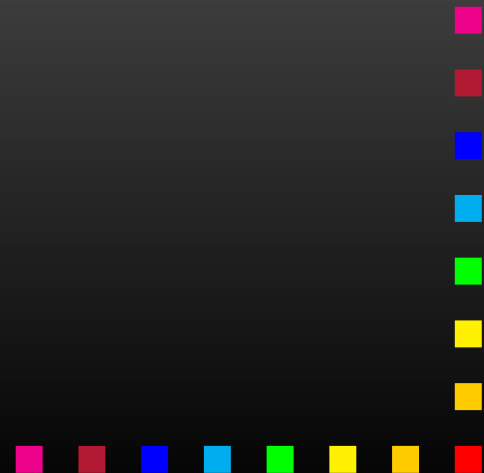
- Universality of Scientific Knowledge
- HEP Theoretical Physics:
cheap & accessible by developing countries.



Why HEP in Madagascar ?



- Universality of Scientific Knowledge
- HEP Theoretical Physics:
cheap & accessible by developing countries.
- However, not a priority
in the Mundial Bank & European Commission
programs for developments !



Why HEP in Madagascar ?



- Universality of Scientific Knowledge
- HEP Theoretical Physics:
cheap & accessible by developing countries.
- However, not a priority
in the Mundial Bank & European Commission
programs for developments !
- Project started from nothing in 1995 : challenging !



Why HEP in Madagascar ?



- Universality of Scientific Knowledge
- HEP Theoretical Physics:
cheap & accessible by developing countries.
- However, not a priority
in the Mundial Bank & European Commission
programs for developments !
- Project started from nothing in 1995 : challenging !
 - Series of presentations for popularizing HEP:
university, authorities, public (TV, newspaper...)
 - Unexpected good reactions and real interests !



HEP-MAD Series of Conferences

HEP-MAD 09
4th High-Energy Physics International
Conference in Madagascar
21-28th August 2009 (Antananarivo)



Scientific program
Present at LHC and Accelerators
QCD and the Physics of Hadrons
Weak, Rare Decays and CP Violation
Models of Grand Unification
Neutrinos and Physics Oscillations

International committee
J. Beringer (US)
G. Denzsch (Austria)
G. Gounaris (Greece)
H. Grosse (Germany)
M. Nordin (Malaysia)
A. Pich (Spain)
J.M. Richardson (UK)
V. Zakharov (Russia)

Conference secretariat
Narine Ranaivatsiraka Montpelier FR
Laboratoire de Physique Théorique et Antiquités
Case 70
UMR Montpelier
Plus d'infos sur le site
www.hep-mad09.fr
E-mail: hep-mad09@univ-montp2.fr
Tel: (33) 04 67 34 11 11
Fax: (33) 04 67 34 11 11

Chairman of the organization
G. Gounaris (Greece)
Laboratoire de Physique Théorique et Antiquités
UMR 5026
E-mail: gounaris@univ-montp2.fr

Local organization
G. Gounaris (Greece)
J. Beringer (US)
H. Grosse (Germany)
M. Nordin (Malaysia)
A. Pich (Spain)
J.M. Richardson (UK)
V. Zakharov (Russia)

Deadline for registration and submission
21 August 2009

Url Address
http://www.lpta.univ-montp2.fr/users/qcd/hep.html



⇒ Since 2001: 01, 04, 07, 09, 11 ?

<http://www.lpta.univ-montp2.fr/users/qcd/hep.html>





- Use the Geographical Site of Madagascar to attract International Participants.

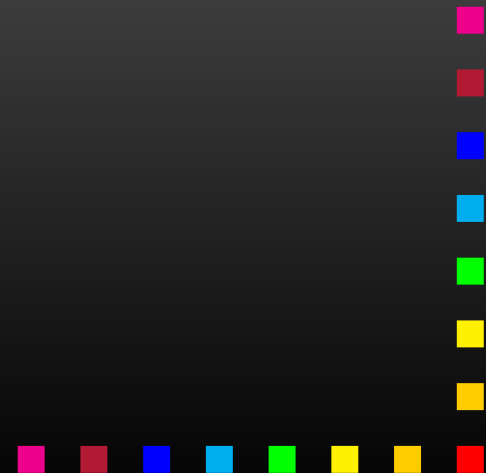




- Use the Geographical Site of Madagascar to attract International Participants.
- A compromise between a conference & school



- Use the Geographical Site of Madagascar to attract International Participants.
- A compromise between a conference & school
- More general HEP subjects including Astroparticles than the QCD-Montpellier conference





- Use the Geographical Site of Madagascar to attract International Participants.
- A compromise between a conference & school
- More general HEP subjects including Astroparticles than the QCD-Montpellier conference
- Special sessions for other national physics fields:
 - Energetics
 - Nuclear Physics & Environment
 - Climatology.



- Use the Geographical Site of Madagascar to attract International Participants.
- A compromise between a conference & school
- More general HEP subjects including Astroparticles than the QCD-Montpellier conference
- Special sessions for other national physics fields:
 - Energetics
 - Nuclear Physics & Environment
 - Climatology.
- 60-80 participants:
 - 20 HEP : 1/2 TH & 1/2 TH (John Ellis, ...)
 - 25 Nationals (other fields \oplus officials)
 - 25 Students (HEP \oplus other fields)





- Use the Geographical Site of Madagascar to attract International Participants.
- A compromise between a conference & school
- More general HEP subjects including Astroparticles than the QCD-Montpellier conference
- Special sessions for other national physics fields:
 - Energetics
 - Nuclear Physics & Environment
 - Climatology.
- 60-80 participants:
 - 20 HEP : 1/2 TH & 1/2 TH (John Ellis, ...)
 - 25 Nationals (other fields \oplus officials)
 - 25 Students (HEP \oplus other fields)
- Supported by IN2P3 & ICTP-Trieste



HEP-MAD Institute (iHEP-MAD)

⇒ Since 2004 <http://www.lpta.univ-montp2.fr/users/qcd/ihepmadttitle.html>

HEP-MAD Institute (iHEP-MAD)

⇒ Since 2004 <http://www.lpta.univ-montp2.fr/users/qcd/ihepmadttitle.html>

- Concrete consequence of the HEP-MAD Conferences

HEP-MAD Institute (iHEP-MAD)

⇒ Since 2004 <http://www.lpta.univ-montp2.fr/users/qcd/ihepmadttitle.html>

- Concrete consequence of the HEP-MAD Conferences
- iHEP-MAD: officially approved by the Ministry in 2004.

HEP-MAD Institute (*i*HEP-MAD)

⇒ Since 2004 <http://www.lpta.univ-montp2.fr/users/qcd/ihepmadtitle.html>

- Concrete consequence of the HEP-MAD Conferences
- iHEP-MAD: officially approved by the Ministry in 2004.
- Organization in 2010:
 - 4 professors (not HEP physicists !),
 - 1 post-doc
 - 10 PhD students since 2004

HEP-MAD Institute (*i*HEP-MAD)

⇒ Since 2004 <http://www.lpta.univ-montp2.fr/users/qcd/ihepmadtitle.html>

- Concrete consequence of the HEP-MAD Conferences
- iHEP-MAD: officially approved by the Ministry in 2004.
- Organization in 2010:
 - 4 professors (not HEP physicists !),
 - 1 post-doc
 - 10 PhD students since 2004
- Good level for Mathematics tools
 - Integration, differential geometry, informatics,...

HEP-MAD Institute (*i*HEP-MAD)

⇒ Since 2004 <http://www.lpta.univ-montp2.fr/users/qcd/ihepmadtitle.html>

- Concrete consequence of the HEP-MAD Conferences
- iHEP-MAD: officially approved by the Ministry in 2004.
- Organization in 2010:
 - 4 professors (not HEP physicists !),
 - 1 post-doc
 - 10 PhD students since 2004
- Good level for Mathematics tools
 - Integration, differential geometry, informatics,...
- Low level for the basic concepts of HEP
 - Field theory, particle physics,...



HEP-MAD Institute (*i*HEP-MAD)

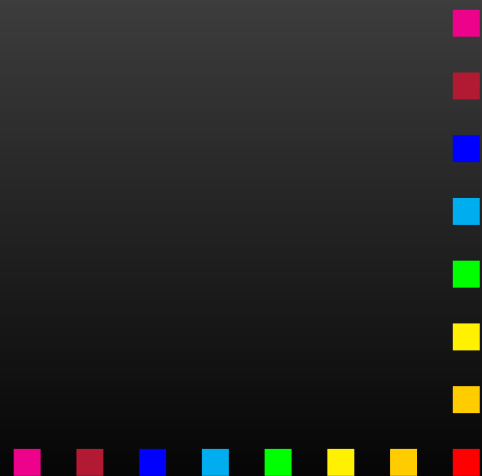
⇒ Since 2004 <http://www.lpta.univ-montp2.fr/users/qcd/ihepmadtitle.html>

- Concrete consequence of the HEP-MAD Conferences
- iHEP-MAD: officially approved by the Ministry in 2004.
- Organization in 2010:
 - 4 professors (not HEP physicists !),
 - 1 post-doc
 - 10 PhD students since 2004
- Good level for Mathematics tools
 - Integration, differential geometry, informatics,...
- Low level for the basic concepts of HEP
 - Field theory, particle physics,...
- Needs international HEP lecturers (in addition to me !)
 - New Cooperation programs with IN2P3 or/and Trieste or/and CERN ?



iHEP-MAD Students

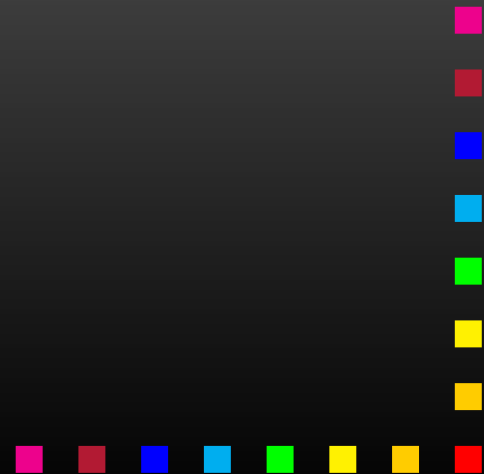
⇒ Since 2004



iHEP-MAD Students

⇒ Since 2004

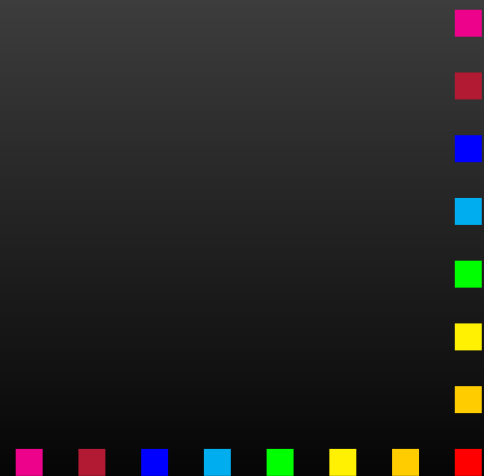
- Summer schools:
 - 4 ICTP-Trieste (2005-2008)
 - 7 CERN-LHCb (2004-2010)
 - 2 ASP-South Africa (2010)



iHEP-MAD Students

⇒ Since 2004

- Summer schools:
 - 4 ICTP-Trieste (2005-2008)
 - 7 CERN-LHCb (2004-2010)
 - 2 ASP-South Africa (2010)
- Post-Doc positions
 - 1 iHEP-MAD
 - 1 Glasgow (LHCb)



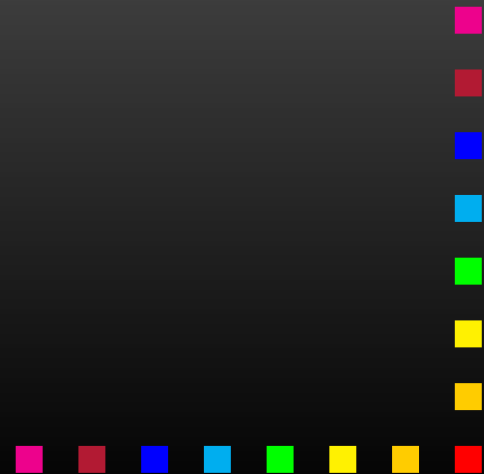
iHEP-MAD Students

⇒ Since 2004

- Summer schools:
 - 4 ICTP-Trieste (2005-2008)
 - 7 CERN-LHCb (2004-2010)
 - 2 ASP-South Africa (2010)
- Post-Doc positions
 - 1 iHEP-MAD
 - 1 Glasgow (LHCb)
- PhD students in 2010
 - 3 iHEP-MAD
 - 1 INSTN Madagascar
 - 1 Julich (experiment)
 - 1 Syracuse (theory)

International Cooperations

⇒ Since 2004

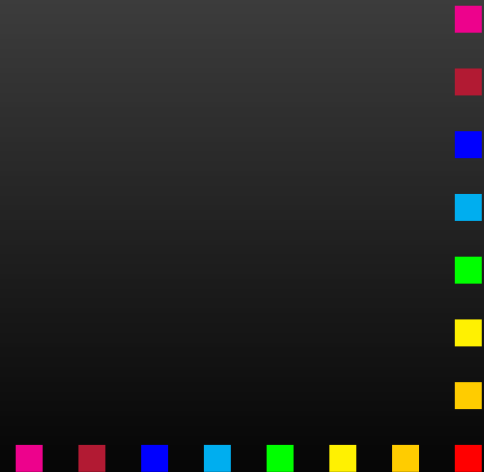


International Cooperations

⇒ Since 2004

- LHCb

- Supported by John Ellis, Emmanuel Tsesmelis, Elie Aslanides, LHCb
- Regular participation at the CERN summer school
 - ⊕ 2 months formation at LHCb
- Official Cooperation : LHCb & Madagascar Univ. (signed in 2010)
- New CERN program for Studentships M. Mangano, R. Lambert (LHCb)



International Cooperations

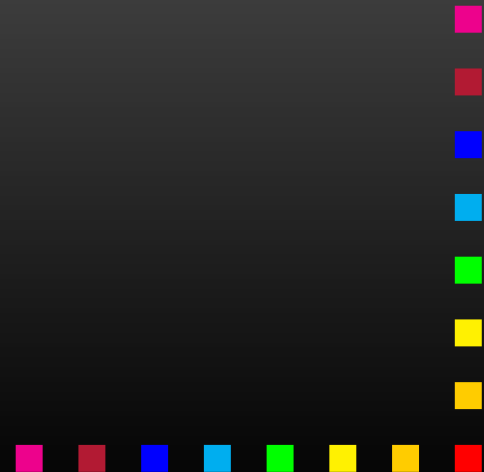
⇒ Since 2004

- **LHCb**

- Supported by John Ellis, Emmanuel Tsesmelis, Elie Aslanides, LHCb
- Regular participation at the CERN summer school
 - ⊕ 2 months formation at LHCb
- Official Cooperation : LHCb & Madagascar Univ. (signed in 2010)
- New CERN program for Studentships M. Mangano, R. Lambert (LHCb)

- **Univ. Montpellier**

- Official Cooperation : Montpellier & Madagascar Univ. (signed in 2006)



International Cooperations

⇒ Since 2004

- **LHCb**

- Supported by John Ellis, Emmanuel Tsesmelis, Elie Aslanides, LHCb
- Regular participation at the CERN summer school
 - ⊕ 2 months formation at LHCb
- Official Cooperation : LHCb & Madagascar Univ. (signed in 2010)
- New CERN program for Studentships M. Mangano, R. Lambert (LHCb)

- **Univ. Montpellier**

- Official Cooperation : Montpellier & Madagascar Univ. (signed in 2006)

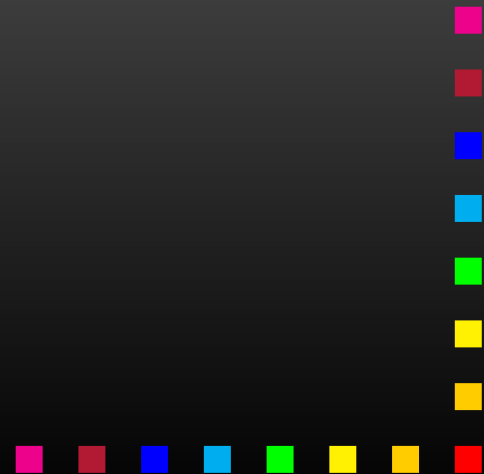
- **ICTP - Trieste**

- Regular participation at the Trieste summer school
- My Travels in Madagascar partly supported by ICTP (since 2007)



Popularizing HEP & LHC

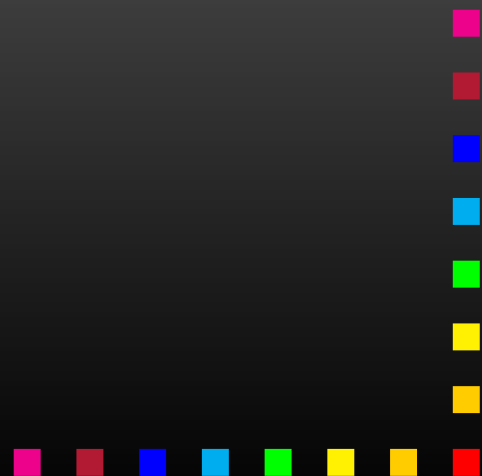
⇒ 2010



Popularizing HEP & LHC

⇒ 2010

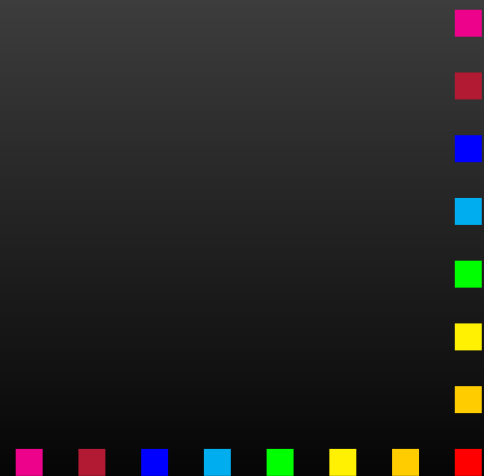
- Marathon of 20 Talks in Schools, Univ. & Institutes



Popularizing HEP & LHC

⇒ 2010

- Marathon of 20 Talks in Schools, Univ. & Institutes
- At Dawn of New Physics for the XXI th Century



Popularizing HEP & LHC

⇒ 2010

- Marathon of 20 Talks in Schools, Univ. & Institutes
- At Dawn of New Physics for the XXI th Century

History and Developments of HEP from Planck to LHC

- History and Physical Units
- The scale of the universe: the 2 infinities
- Understanding the origin of the universe (Big-Bang)
- Excursion towards the large infinity (Astrophysics)
- Towards the infinitely small scale: the Standard Model
- Unification of the 3 forces of nature
- Exploring the substructure of matter
- Technological consequences of HEP and LHC
- Geo-Political Implications of the LHC
- Benefits for Madagascar



Popularizing HEP & LHC

⇒ 2010

- Marathon of 20 Talks in Schools, Univ. & Institutes
- At Dawn of New Physics for the XXI th Century

History and Developments of HEP from Planck to LHC

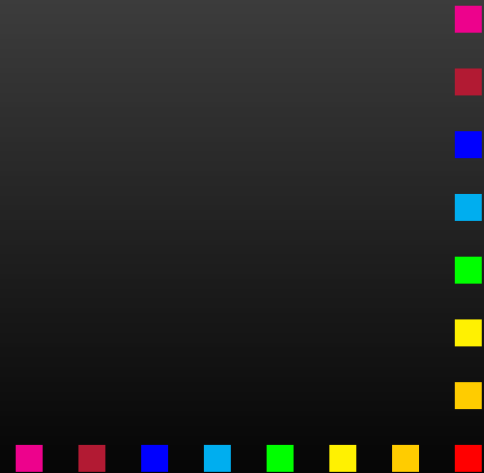
- History and Physical Units
 - The scale of the universe: the 2 infinities
 - Understanding the origin of the universe (Big-Bang)
 - Excursion towards the large infinity (Astrophysics)
 - Towards the infinitely small scale: the Standard Model
 - Unification of the 3 forces of nature
 - Exploring the substructure of matter
 - Technological consequences of HEP and LHC
 - Geo-Political Implications of the LHC
 - Benefits for Madagascar
- Unexpected interests & good questions !



➤ Some Photos of the audience



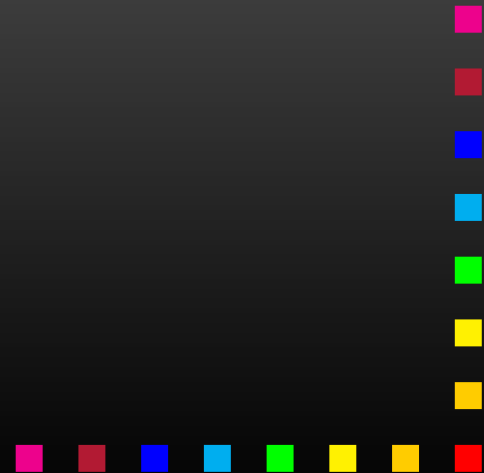
Benefits for Madagascar



Benefits for Madagascar



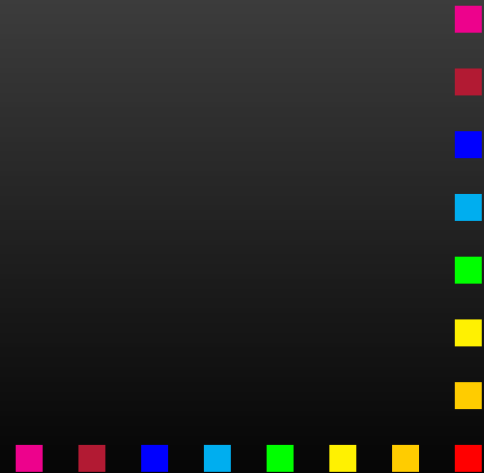
- **International** Connections & Cooperations



Benefits for Madagascar



- International Connections & Cooperations
- New knowledge in Science & Technology



Benefits for Madagascar



- International Connections & Cooperations
- New knowledge in Science & Technology
- Long-term developments



Needs for Further Developments



Needs for Further Developments



- **Concretization of** different Formal Cooperations
 - Invitation of Lecturers
 - Fellowships for students (international or bilateral program)



Needs for Further Developments



- **Concretization of** different Formal Cooperations
 - Invitation of Lecturers
 - Fellowships for students (international or bilateral program)
- **Improvement of the** Internet Connection (too slow) :
 - National Optic Fiber project (not yet operative)
 - Satellite Network via Africa (an eventual possibility ?)



Needs for Further Developments



- **Concretization of** different Formal Cooperations
 - Invitation of Lecturers
 - Fellowships for students (international or bilateral program)
- **Improvement of the** Internet Connection (too slow) :
 - National Optic Fiber project (not yet operative)
 - Satellite Network via Africa (an eventual possibility ?)
- **Computer Materials, books,...** (poor Institute)



Needs for Further Developments



- **Concretization of** different Formal Cooperations
 - Invitation of Lecturers
 - Fellowships for students (international or bilateral program)
- **Improvement of the** Internet Connection (too slow) :
 - National Optic Fiber project (not yet operative)
 - Satellite Network via Africa (an eventual possibility ?)
- **Computer Materials, books,...** (poor Institute)
- **Actions for Developing** Education in General
 - cooperations,
 - partnerships (jumelage,...)
 - associations,..

