

ACTIVITY REPORTING FORM

FOR CDC GRANTS PROGRAM
IMU Simons African Fellowship Program

(Deadline for completion: four (4) week after the end of the research visit)

Please note that at least four pictures of the supported activity should be included/ attached to this report. (by email).

After consideration by CDC, the intention is that this activity report and pictures will be made publicly available on the CDC website.

Name of grantee: PROF. FORTUNE MASSAMBA

Home institution and country of grantee: University of KwaZulu-Natal, South Africa

Name of the host: PROF JOEL TOSSA

Name of the host institution and country: Institut de Mathematiques et des Sciences Physiques, Benin

Topic of the research activity: Contact and symplectic geometry and related topics.

Dates spend at the center/host institution: 31/05/2018 - 22/07/2018

The progress report should a brief (one page) activity report:

1. Summary statement (1-2 sentences) of major outcome of your visit:

During my visit at the Institut de Mathematiques et de Sciences (IMSP) (Benin), I worked on the geometry and topological of some manifolds by paying attention to some of the almost contact manifolds.

2. Brief description of your research activities during your research visit:

My research activities were primarily based on symplectic and cosymplectic topology/geometry and these were pivoted by the Tischler's Theorem which says that: A compact manifold admits a non-vanishing closed 1-form if and only if the manifold fibres over a circle. A new version of Moser's Theorem for cosymplectic manifolds has also been introduced. I also gave some talks on pseudo-Riemannian geometry to MSc and PhD students.

3. Students and post-doctoral fellows advised:

I advised four MSc and one PhD students. Some of them are manifested their will to continue with their PhD studies under my supervision.

4. Joint activities with your host:

We co-supervised two Msc students on some geometric aspects of immersions

5. Research in progress (as a result from the visit):

Among the subjects of the research in progress, there are the rigidity problem of cosymplectic structure and one of the questions that my collaborators and I would like to focus on is how can we go back to the geometry when the uniformly limit of an automorphism sequence of mapping torus is also an automorphism of mapping torus.

6. Papers published or in preprint form as a result from the research visit:

One preprint is ready (title: Some remarks on symplectic structures) and two preprints are in preparations (with A. Banyage, F. Houenou, J. Tossa).

7. Planned future activities as a result of your research visit:

My collaborators and I are planning to investigate the extension the concept of Hamiltonian vector fields in symplectic geometry to the cosymplectic as all as studying the cosymplectomorphism. The latter contains the properties of Lie algebra.