

**ACTIVITY REPORTING FORM  
THE IMU Simons African Fellowship PROGRAM**

*(Deadline for completion: see grant letter)*

*The progress report should include a brief (one page) activity report prepared by each mathematician supported, listing research in progress, papers published or in preprint form, students and post-doctoral fellows advised and dates spent at a center.*

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

***Please attach at least 2 pictures to this report (to be sent by email) which shows you with your host.***

1. Name of the Grantee: Dr Surafel Lulseged Tilahun
2. Country of origin of the Grantee: Ethiopia
3. Name of the center of excellence visited: Thompson Rivers University
4. Name, position and email address of the host: Prof. M. Tawhid, Head of Department of Mathematics, Thompson Rivers University
5. Dates of the research visit: June 16, 2017 – July 16, 2017

**1. Activity report (at least 200 words) Listing research in progress, papers published or in preprint form**

In this visit the search behaviour of swarm intelligence has been studied. A generalization framework for these algorithms is explored and proposed. A paper with the title "Swarm hyperheuristic framework" is prepared for the submission of the special Issue of Journal of Heuristics on Intensification, Diversification and Learning in Metaheuristic Optimization (extended submission deadline 15 August). The abstract is attached together with this report.

A seminar presentation for the department was delivered on July 6 at 11am. Furthermore, a series of talk on advances in swarm intelligence is given by Dr Tilahun in the workshop held 10 – 13 July 2017 in the department, the letter of appreciation is attached with this report.

Further collaborations for future research works has been discussed and outlined. These includes projects on the application of metaheuristics in scheduling problems in particular and combinatorial optimization problems in general. Other research activities like organizing a workshop or conference, editing or writing books, editing special issues of journals and possibilities on joint supervision of students have been discussed.

**2. Students and post-doctoral fellows advised:**

Post-doctoral fellow: Abdelmonem Ibrahim

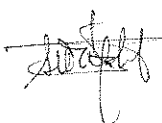
**3. Including a summary statement (1-2 sentences) of major outcome of research visit:**

A manuscript has been being finalized to be submitted for a journal. A workshop and seminar presentation was given which creates a discussion with the staffs and students in the department. Exchange of idea was made with the staff and students, in particular with the postdoc student mentioned above.

4. Planned follow up activities and future implications (2-3 sentences)

It is the start of future collaboration, hence, a number of possible projects are discussed and in particular a project on metaheuristic for combinatorial optimization problems is proposed to be the next issue for the research collaboration.

Date: Aug 7, 2017

Signature 

Designation: Lecturer