



Fellow	Dieudonne Mbouna
Host Organisation	University of Warsaw
Scientific coordinator	Galina Filipuk



I - SCIENTIFIC ACTIVITY DURING YOUR FELLOWSHIP

During the fellowship, I worked on the general theory of classical orthogonal polynomials on bi-lattices. As an output, we wrote a manuscript on it which is currently under review in a journal. Therein, it is given necessary and sufficient conditions for the regularity of a linear form defined on the dual space of a lowering operator on bi-lattice satisfying a distributional equation. In addition, description of related orthogonal polynomial sequences is given as well as their classification.

We also tried several problems with regular meetings with my supervisor and external collaborator. This program leads to the initiation of an online seminar called "Portuguese-Polish Online Analysis Seminars" where activities can be seen at <https://www.mat.uc.pt/~pgsfop/activities.html>. This will be a long term exchange activity and collaboration between both institutes and researchers.

II - PUBLICATION(S) DURING YOUR FELLOWSHIP

During the fellowship period, my supervisor and I (with in addition an external collaborator, Kenier Castillo) wrote the following manuscript:

1- K. Castillo, G. Filipuk and D. Mbouna, On classical orthogonal polynomials on bi-lattices.

The manuscript is available on Arxiv at the following address

<https://arxiv.org/abs/2311.05636>

It is currently under review in a per-review scientific journal of the field.

Also, during the fellowship period, important revisions of the following manuscript were done.

2- D. Mbouna and A. Suzuki, Some Appell-type orthogonal polynomials on lattices.

The manuscript will appear in the Ramanujan Journal.

III - ATTENDED SEMINARS, WORKHOPS, CONFERENCES

I was an invited speaker of the following conferences in Poland.

1- June 2023, 15th Symposium on Integrable Systems, University of Bialystok, Poland. Presentation title: Characterization of orthogonal polynomials on



lattices.

2- June 2023, SIDE 14.2: Workshop on Symmetry and Integrability of Difference Equations, University of Warsaw, Poland. Presentation title: Coherent pair of measures on lattices.

IV - RESEARCH EXCHANGE PROGRAMME (REP)

I have not visited any other ERCIM Institute.