Call For Papers

Special Issue: "Cancer & HIV/AIDS Dynamics: From Optimality to Modelling"

In light of: 2nd International Conference on Mathematical Modelling in Applied Sciences
August 20-24, 2019, Belgorod, Russia
http://icmmas19.alpha-publishing.net

The dynamical system has been founded by Henri Poincaré, as a system in which a function describes the time dependence of a point in a geometrical space. As examples, we may mention the description of swinging of a clock pendulum, the flow of water in a pipe, and so on. Cancer is a result of the uncontrollable growth of cells and can invade surrounding healthy tissues. It also spreads to other parts of the body. But benign or non-cancerous cells do not spread elsewhere in the body. Cancer cells continuously evolve in cell division, making irregular the functions of organs by forming lumps or mass of the abnormal cells. It is called a tumor. It becomes one of the leading causes of mortality in the human endeavors. Metastasis is the process of spreading and formation of secondary tumors. It is the main cause of death in cancer patients. Therefore, understanding the mechanism of cancer progression is necessary for its diagnosis and treatment. In the literature, many researchers have developed mathematical models to understand and predict how cancer evolves and responds to therapy.

On the other hand, the infection by human immunodeficiency virus (HIV) continues to be a major global public health issue. The most advanced stage of its infection is acquired immunodeficiency syndrome (AIDS). The current treatments still present substantial limitations: does not fully restore health and the offered medications are not curative, in fact there is no cure or vaccine to the above deadly diseases. In mathematics and computer sciences, an optimization problem is the problem of finding the best solution from all feasible candidates. It can be divided into two categories, depending on whether the variables are continuous or discrete. An optimization problem with discrete variables is known as a combinatorial optimization problem. In a combinatorial optimization problem, we are looking for an object such as an integer, permutation, or graph from a finite (or possibly countable infinite) set. Problems with continuous variables include constrained and multimodal problems.

Upon making some appropriate formulations and combinations on above areas, and by adapting the techniques and ideas that were discussed at ICMMAS'19, one can introduce and treat new future directions and open problems which can be applicable in real life. This special issue will consider substantially extended versions of papers presented at the conference ICMMAS'19 as well as external submissions via an open call for papers. We strictly invite strong contributions that were discussed and improved during the scientific meeting, together with interesting complementary novel articles. More precisely, original results obtained from advanced theoretical, experimental, and numerical simulations in all aspects related to cancer and HIV/AIDS dynamic systems with optimization/variational analysis and detours are welcome. For a paper to be accepted, it must have a high level contribution on mathematical optimization techniques and their applications to Cancer and/or HIV/AIDS. Note that submitted papers should be explicitly meeting with the Aims and Scope of EPJP journal.

Topics to be included

- Optimization techniques for cancer invasion models
- Optimal control of disease dynamics
- Endemic equilibrium and stability analysis
- Optimality properties for cancer systems
- Minimizing the cancerous cell population
- Optimal examination for cancer treatments
- Tumor-immune competitive optimization system
- Diffusion model for cancer tumor: Optimization approach
- Numerical simulations of brain tumor models
- Computational methods for optimization cancer systems
- Diet and colon cancer: evidence and optimality of human and animal models
- Cells stimulate of tumor microenvironment in optimizing cancer immune control
- Optimal Control of HIV/AIDS infection

Instructions for Submission

Authors are encouraged to submit original papers, not published or submitted elsewhere, to a special issue of Journal of Optimization Theory and Applications*.* The submission website for this journal is located at: [Submission Online](). To ensure that your manuscripts are correctly identified for possible inclusion into the special issue we are editing, it is important that authors reply (at Additional Information step) to a dedicated question in the submission workflow. The authors will have to select the focus point "FP : Cancer & HIV/AIDS Dynamics: From Optimality to Modelling" as a response to the custom question "Does this manuscript belong to focus point?". The papers should be written in English, carefully checked for correct grammar and spelling. Each paper should clearly indicate the nature of its scientific contribution. Manuscripts should be prepared using LaTeX and followed the EPJP [Instructions for Authors](). Submission of a manuscript will be understood to mean that the paper is not being considered for publication elsewhere. Papers that are not prepared according to the above instructions or badly written will be immediately rejected. All papers will be subject to a peer review process.

Important Dates

- ❖ Deadline for initial submissions of papers: January 31, 2020
- ❖ Full publication: According to journal arrangement

Guest Editors

Prof. Amar Debbouche, Guelma University, Algeria
[amar_debbouche@yahoo.fr]()

Prof. Juan J. Nieto, University of Santiago de Compostela, Spain
[juanjose.nieto.roig@usc.es]()

Prof. Delfim F. M. Torres, CIDMA & University of Aveiro, Portugal
[delfim@ua.pt]()