Announcement of four Tenure Track Research Positions in the Electronics Department of the *Instituto Nacional de Astrofísica Óptica y Electrónica (INAOE),* Tonantzintla, Puebla, Mexico

The *Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE)*[1] is a federally funded public research center in the state of Puebla, Mexico, dedicated to basic and applied research. It offers graduate programs in Astrophysics, Optics, Electronics, Computer Science, Space Science and Technology and Biomedical Technology, accredited by the *"Sistema Nacional de Posgrados (SNP)"*[2] of the CONACyT[3]. INAOE provides an intellectually stimulating work environment, undertaking state-of-the-art research as well as high quality technological development and certified quality graduate courses.

INAOE is one the most renowned Public Research Centers in Mexico, and the faculty of its Electronics Department (ED) includes some of the most important research leaders in the country, in many of the areas of modern electronics. The faculty is comprised of 32 full time researchers, of whom 31 are members of the *"Sistema Nacional de Investigadores (SNI)"*[4]. The ED offers Master's of Science and Doctoral programs, included in the SNP as "International Quality Graduate Programs", and thus all the students are entitled to a full scholarship by the CONACyT. This announcement invites qualified researchers to join the ED's faculty, filling four tenure-track positions in specific areas, to wit, Digital Integrated Circuit Design, Communications, Electronic Instrumentation and Microelectronics and Semiconductor Devices.

Based on INAOE's General Director's attributes, established in Article 20, Section I, of the "Decree by which the *Instituto Nacional de Astrofísica, Óptica y Electrónica* is Restructured", and aiming at finding the best candidates to fill these positions, while efficiently contributing to meet institutional goals, the INAOE hereby invites all those professionals, Mexican or foreign, who would like to earn the position of Senior Researcher for an initial one year period, as stated in Article 24, Section I, of the Faculty Statute of the INAOE, to undertake scientific and technological research, as well as technological innovation associated to the needs of different social sectors, and prepare high quality human resources through graduate studies, to apply for one of these positions according to the following

Terms

I. Academic Background

A doctoral degree or equivalent in Electronics or related areas, and a research career showing a proven, successful academic capability to autonomously undertake research projects and to teach graduate courses. Proof of the former by having at least seven referred scientific publications in his/her area of expertise, indexed in the *Journal Citation Report* (JCR), and impacting Digital Integrated Circuit Design, Communications, Electronic Instrumentation and Microelectronics and Semiconductor Devices.

[1] National Institute for Research on Astrophysics, Optics and Electronics
[2] A registry of accredited graduate programs issued by CONACyT
[3] The National Council for Science and Technology
[4] National System of Researchers, grants a distinction and fellowship for outstanding research

II. Candidate's Profile

Selected candidates must contribute to the advancement of the Electronics Department of the INAOE, undertaking research projects with external funding, contributing to graduate programs, establishing academic collaborations with personnel from the department as well as with those of the other departments of the INAOE. They must also have excellent abilities for teamwork, and be proficient in both Spanish and English, in reading, writing and speaking. It is also desirable that candidates belong to the SNI, or have the academic achievements to qualify in the short run. Candidates must have the specific capabilities required for each open position:

1) *Digital Integrated Circuit Design* – A solid background, knowledge, and experience in the field of digital integrated circuit design. Proficiency with integrated circuit simulation programs such as HSPICE, CADENCE, Mentor Graphics, and the like. Ample experience in the design, simulation, manufacturing and testing of digital integrated circuits. Familiarity with the design rules for the most common global CMOS digital integrated circuit nodes and fabs. A post-doctoral stay in the field of digital integrated circuit design.
2) *Communications* - A solid background, knowledge, and experience in the fields related to classical communications, such as modulation, coding, channel models, and information theory, as well as in those of modern communications, especially in cognitive radio, software defined radio, OFDM, modulation and digital signal processing for the 5G network, and related areas. Familiarity with simulation and numerical analysis programs such as MATLAB, especially SIMULINK, and the kind. Experience in FPGA-based design. Knowledge of several FPGA platforms, from National Instruments or the like, for wireless communications. Awareness of the current trends and tools available for the development of wireless communications. A post-doctoral stay in the field of modern communications.
3) *Electronic Instrumentation* – Experience in the development of applications related to intelligent electronic instrumentation and signal and image processing, especially related to the fields of health care and the environment. Experience in the design, simulation and implementation of solutions using intelligent systems, preferably those oriented to accelerating elements. A post-doctoral stay in any of the fields related to intelligent systems.
4) *Microelectronics and Semiconductor Devices* – Experience in research and application development related to nanoscience, nanotechnology, integrated photonics, electrophotonics, semiconductor physics, and integrated and photonic circuits. Familiarity with device and fabrication process simulation and numerical analysis programs such as COMSOL, LUMERICAL, and SILVACO. Experience in the analysis, design and manufacturing of CMOS compatible light emitters and detectors. Clean room experience in the fabrication of integrated circuits and semiconductor devices. A post-doctoral stay in the fields related to integrated photonics, especially in the visible spectrum.

III. Job Description

The chosen candidates must:

- Perform high quality, original research in his/her area of expertise, working in a team;

- Publish the results of their research activities in top-of-the-line conferences and the highest ranked refereed journals in their field;
- Collaborate with all the other members of the faculty, as well as other researchers in the INAOE;
- Teach high quality and high-level graduate courses, especially those of the programs of the Electronics Department;
- Supervise master's theses and doctoral dissertations;
- Serve as a reviewer of theses and dissertations directed by colleagues;
- Fulfill the administrative tasks related to the position;
- Participate in the different activities of the Institute.

IV. Additional considerations

- Availability to live in or nearby the city of Puebla, Mexico.
- A positive attitude when confronted with challenges, and to work in general.
- A high sense of responsibility.
- Willingness to work in a team.
- Foreign nationals should be in possession of required legal documents to allow them to work and perform the duties herein established.

V. Deadline for application and procedure

The candidates aspiring to obtain the position of Tenure Track Researcher under this announcement, must present:

- A letter stating their motivation to work in INAOE.
- A research project proposal for the middle run (3 years), in less than five pages, including personal professional development goals, academic, and scientific and technological development aims, highlighting the main foreseen scientific contributions, and indicating how they will integrate with the existing faculty of the Electronics Department.
- A résumé with evidential documents.
- Copies of their three most relevant publications.
- Contact information of three researchers of worldwide prestige that could be asked to provide a letter of recommendation of the candidate in digital form.

All the documents must be delivered or sent by **November 30, 2021**, to:

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For questions related to this call, please contact Dr. Roberto Murphy Arteaga, Head of the Electronics Department, at the following e-mail address: rmurphy@inaoep.mx.

All applications will be reviewed by a committee consisting of personnel from the Electronics Department, who will program interviews with them through the Research and Development Directorate. The opinion of this committee will be considered by the General Director of the INAOE, who will, in case all the requirements established in Article 24, Section I, of the Faculty Statute of the INAOE are fulfilled, grant the position to the selected candidate. These positions will remain open until they are satisfactorily filled.

VI. Additional Information

Let it be known that once the one-year period established in this announcement for the selected candidates comes to an end, they can apply for permanence, promotion, and tenure, based on the Faculty Statute of the INAOE and all the other pertinent regulations. All offered positions are full-time, with a position and salary in accordance with the academic trajectory of each candidate. The position includes the following fringe benefits besides salary: Social Security for the researcher and his/her immediate family, sick leave, paid vacation after six months of work, and a retirement package. Based on internal regulations, selected candidates will be offered a temporary contract, which will be reviewed at the end of the first and third years. The initial position is the equivalent to an Associate Professor in the United States. Besides the salary and benefits, the researchers in the INAOE can qualify for an additional stipend based on a merit scale. They can also apply to become part of the SNI and receive a monthly fellowship in case of meeting the requirements. As part of their benefits, the researchers can apply for a three-month paid leave every year to collaborate with other academic institutions, as well as to enjoy a paid sabbatical leave after a period of six years of uninterrupted work.