



# 3<sup>rd</sup> International Conference

## on Electronic Engineering and Renewable Energy

20-22 May, 2022

Saïdia, Morocco



**ADRFNT**  
ASSOCIATION POUR LE DÉVELOPPEMENT DE LA RECHERCHE  
ET DE LA FORMATION EN NOUVELLES TECHNOLOGIES





**3<sup>rd</sup> International Conference On Electronic Engineering  
and Renewable Energy (ICEERE'22)**  
**SAIDIA, MOROCCO**  
**20-22May 2022**



# Program and Useful information

**20-22May 2022**

**Hotel, Be-Live, Saidia, Morocco**

**[www.iceere.com/iceere22/](http://www.iceere.com/iceere22/)**

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## **WELCOME MESSAGE FROM GENERAL CHAIRS**

It is our great pleasure to welcome you to the second edition of the International Conference on Electronic Engineering and Renewable Energy (ICEERE'22) which will be held from 20th to 22th May, 2022 in Saidia city, Morocco.

The 3<sup>rd</sup> ICEERE'22 provides an international platform for electrical engineers and experts to highlight key issues and developments essential to the multifaceted field of electrical engineering systems and seeks to address multidisciplinary challenges in Information and Communication Technologies. The conference has also a special focus on energy challenges for developing the Euro-Mediterranean regions by the application of the new technologies of renewable energy in agriculture activities and rural areas.

ICEERE'22 is intended for academia, including graduate students, experienced researchers and industrial practitioners working in the fields of Electronic Engineering and Renewable Energy. This event includes different kinds of presentations given by researchers and experts from the international community, including keynote speakers, special sessions, posters and tutorials. It covers a wide spectrum of topics as renewable energy, electronics, materials and devices applications, image and signal processing and Network & telecommunications.

The overwhelming success of ICEERE'22 is doubtlessly the result of the commitment, perseverance, implication and hard work of different stakeholders, particularly, the Organizing Committee Members, Technical Program Committee members, keynote and invited talks speakers, technical sponsors and all the participants. We seize this opportunity to address them all our most sincere thanks and gratitude.

Last but not least, we wish all the participants in ICEERE'22 a very successful and fruitful conference and a wonderful and enjoyable stay in the wonderful city of Saïdia.

**Bekkay Hajji**  
Mohammed First University  
ENSA, Morocco.

**Abdelhamid Rabhi**  
University of Picardy Jules Verne  
France

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**Adel Mellit**, Jijel University, Algeria

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## ICEERE'22 VENUE: Hotel Be-Live, Saidia, Morocco



## **TOPICS**

<b>Session I</b>	<b>Solar Energy- PV</b>
<b>Session II</b>	<b>Solar Energy –Thermal</b>
<b>Session III</b>	<b>Power Electronics and Control Systems</b>
<b>Session IV</b>	<b>Electric Vehicle</b>
<b>Session V</b>	<b>Electronics and biomedical Applications</b>
<b>Session VI</b>	<b>Materials and Devices Applications</b>
<b>Session VII</b>	<b>IoT and Machines learning methods</b>
<b>Session VIII</b>	<b>Communication, Networks and Information technology</b>

## ICEERE '22 ADVANCED PROGRAM OVERVIEW

Friday 20May			Saturday 21May			Sunday 22May		
8:30 -9:00 Registration			8:30 -9:00 Registration			8:30-9:00 Registration		
9:00 - 10:00 Welcome and Opening			9:00–10:00 <b>Keynote 4</b> <b>Prof. Ramesh Nath Premnath (Springer Singapore): Book Publishing with Springer</b>			9:00 – 10:00 <b>Keynote 8</b> <b>Prof. El Houssaine El Boudouti (Mohammed First University, Morocco )</b> : One-dimensional photonic crystals: Fundamentals and applications		
10:00 – 10:45 <b>Keynote 1</b> <b>Prof. Guillaume Caron (University of Picardie Jules Verne, France )</b> Image blur control benefits to visual servo control in robotics			10:00 – 11:30 (Room 1) Session VII-1	10:00 – 11:45 (Room 2) Session VIII-2	10:00 – 11:30 (Room 3) Session IV	10:00 – 12:00 (Room 1) Session I-2	10:00 - 11:30 (Room 2) Session VI-2	10:00 - 11:30 (Room 3) Session III-2
10:45 – 11:15 Coffee Break / Poster			11:15 – 11:45 Coffee Break / Poster			11:40 - 12:15 Coffee Break/Poster		
11:15 - 13:15 (Room 1) Session I-1	11:15 - 12 :45 (Room 2) Session V-2	11 :15 - 13:00 (Room 3) Session VI-1	11:45 – 12:30 <b>Keynote 5</b> <b>Prof. Jérôme LAUNAY (LAAS-CNRS, France)</b> :Lab-on-disc for in situ monitoring of surface water quality by algae biosensors and physicochemical sensors			12:00 – 12:30 <b>Keynote 9</b> <b>Prof. Antonio Gagliano(University of Catania, Italy)</b> :Energy performances of a photovoltaic thermal plant using different coolant		
12:45 – 14:00 Lunch			12:30 – 14:00 Lunch			12:30 – 13:00 <b>Keynote 9</b> <b>Prof. Anne MIGAN DUBOIS ( Paris-Saclay University, France )</b> : Fault Detection and Diagnosis applied to photovoltaic power plants		
14:00 – 15:00 <b>Keynote 2</b> <b>Prof. Pierre Temple-Boyer (LAAS-CNRS, Toulouse) </b> :New methods developed for precision agriculture			14:00 – 15:00 <b>Keynote 6</b> <b>Prof. Manu Malek (USA )</b> : Internet of Things: Applications, Enablers, Security			13:00 – 14:00 Lunch		
15:00 – 16:45 (Room 1) Session V-1	15:00 – 16:30 (Room 2) VII-2	15:00– 16:00 (Room 3) Session VI-1	15:00 – 16:30 (Room 1) Session II-1	15:00 - 16:30 (Room 2) Session III-1	15:00 – 16:30 (Room 3) Session VIII-1	14:00 -14:30 Closing Ceremony		
16:30 – 17:00 Coffee Break			16 :30 – 17 :00 : Coffee Break					
17:0v0 – 18:00 <b>Keynote 3</b> <b>Prof. Houcine Chafouk (University of Rouen Normandy, France )</b> :Health Monitoring Systems for the Renewable Energy			17:00 – 19:00 (Room 1) Session II-1	17:00 - 19:00 (Room 2) Session II-2	17:00 - 18:15 (Room 3) Session VI-2			
			19:00-19h45 : <b>Keynote 7</b> <b>Prof. Ali AHAITOUF(Sidi Mohamed Ben Abdellah University)</b> : Machine learning for Analog Circuits Design					

## ICEERE'22 KEYNOTE SPEAKERS

	<p><b>Smart Renewable Energy Systems and decarbonisation.</b> <b>By Dr. Henrich Lund</b> Editor in chief of Journal Energy, Denmark</p>
	<p><b>Book Publishing with Springer</b> <b>By Dr. Ramesh Nath Premnath.</b> Editor Applied Sciences Engineering, Materials Science, Energy, Water, Climate Senior publishing editor for academic books Springer Singapore</p>
	<p><b>Internet of Things: Applications, Enablers, Security</b> <b>By Manu Malek.</b> Editor-in-Chief of Elsevier's International Journal of Computers and Electrical Engineering, USA</p>
	<p><b>One-dimensional photonic crystals: Fundamentals and applications</b> <b>By Dr. El Houssaine El Boudouti</b> Mohammed First University, Morocco</p>
	<p><b>Health Monitoring Systems for the Renewable Energy</b> <b>By Dr. Hocine Chafouk</b> ESIGELEC, University of Rouen Normandy, France</p>

	<p><b>Energy performances of a photovoltaic thermal plant using different coolant</b></p> <p><b>Dr. Antonio Gagliano</b> University of Catania, Italy.</p>
	<p><b>New methods developed for precision agriculture</b></p> <p><b>By Dr. Pierre Temple-Boyer</b> LAAS-CNRS, France</p>
	<p><b>Image blur control benefits to visual servo control in robotics</b></p> <p><b>By Dr. Guillaume Caron</b> University of Picardie Jules Verne, France</p>
	<p><b>Agrivoltaics: novel systems to optimize the food water energy nexus.</b></p> <p><b>By Dr. Hélène Marrou</b> University Mohammed VI Polytechnic, Morocco</p>
	<p><b>Fault Detection and Diagnosis applied to photovoltaic power plants</b></p> <p><b>By Dr. Anne MIGAN DUBOIS</b> Paris-Saclay University, France</p>



**Lab-on-disc for in situ monitoring of surface water quality by algae biosensors and physicochemical sensors**

**By Dr. Jérôme LAUNAY**  
**LAAS-CNRS, France**



**Machine Learning for Analog Circuits Design**

**By Dr. Ali AHAITOUF**  
**Sidi Mohamed Ben Abdellah University of Fès, Morocco.**

## ICEERE'22 PROGRMA

### PRESENTATION GUIDELINES

- All presentations are in English.
- Each presentation is fifteen (15) minutes long with five (5) minutes for Q/As.
- Arrive 10 minutes before the session start time to upload your power point presentation. Please, start and end your presentation on time and keep the time schedule.
- For poster presentations, the posters should be displayed one hour before the beginning of the poster session and any explanation required should be provided to session chairs and visitors.

### SESSIONS PROGRAM

<b>Session I-1</b> <b>Friday, May20, 2022</b> <b>11:15 -13:15</b>	<b>Solar Energy-PV(1)</b>  <b>Chairs :</b> <b>Luís Martins, University of Minho, Guimarães, Portugal</b> <b>Michele Calì, Catania University, Italy</b> <b>Adel Mellit, Jijel University, Algeria</b>
<b>11:15 -11:30</b>	CFD and Wake Analysis of the Wind Flow Through Two Wind Turbines (ID: 19). <b>Diogo Silva, João Silva, Paulo Pinto, Senhorinha Teixeira and Jose Teixeira</b>
<b>11:30 -11:45</b>	Seasonal variation of atmospheric absorptivity in Ouarzazate(ID: 55). <b>Ouassila Salhi, Mohammed Diouri, Abdelmoula Ben-Tayeb, Ibtissam Marsli, Mohammed Amine Moussaoui and Sara El Hassani</b>
<b>11:45 -12:00</b>	Experimental validation of a Photovoltaic/Electrolysis system dedicated to supplying an alternating load and producing hydrogen (ID :70). <b>Saloua Yahyaoui, Abdelhak Aziz, Abdelhafid Messaoudi, Jalal Blaacha, Sanae Dahbi and Imane Messaoudi</b>
<b>12:00-12:15</b>	Autonomous solar Photovoltaic/Battery system for the electrification of wastewater pumping stations (ID: 91). <b>Mohammed Chennaif, Mohamed Maaouane, Mohamed Larbi Elhafyani, Hassan Zahboune, Smail Zouggar, Jalal Blaacha, Mohammed El Fahssi, Omar Mommadi and Jamal-Eddine Salhi</b>
<b>12:15-12:30</b>	Comparison of Fixed-Tilt and Tracking PV Plants Coupled to Reverse Osmosis Desalination System: Case of Agadir and Ouarzazate(ID: 101). <b>Hasnae El Mouden, Mohammed Touba, Mohamed Akhsassi, Fatima AitNouh, Rania Benbba, ManarJabbour, Laila Mandi and Abdelkader Outzourhit</b>

<b>12:30-12:45</b>	Evaluation of energy use intensity and energy cost of a residential building in Morocco using BIM environment (ID: 106). <i>Mohamed Maaouane, Mohammed Chennaif, Mohammed El Arabi, Jalal Blaacha, Mohammed El Fahssi, Hassan Zahboune and Smail Zouggar</i>
<b>12:45-13:00</b>	Thermal comfort assessment of a small house in Portugal using EnergyPlus and Ansys Fluent (ID: 113). <i>Inês Teixeira, Diogo Esteves, Nelson Rodrigues, Luís Martins, José Teixeira, Ana Ferreira and Senhorinha Teixeira</i>
<b>13:00-13:15</b>	Influence of typical meteorological years on the optimization of incident solar radiation for PV applications in Portugal (ID: 114). <i>Ana C. Ferreira, Nuno Menezes, Inês M. Teixeira, Senhorinha F. Teixeira and Luís B. Martins</i>

<b>Session I-2</b>  <b>Sunday, May22, 2022</b>  <b>10:00 -12:00</b>	<b>Solar Energy-PV (2)</b>
	<b>Chairs :</b>
	NacerMsirdi, Aix Marseille Université, Marseille, France El Hafyani Mohamed Larbi, ENSA, Mohamed First University, Morocco El Mehdi Abdelmalek, ENSA, Mohamed First University, Morocco
<b>10:00-10:15</b>	Time Series Forecasting of a Photovoltaic Panel Energy Production (ID: 118). <i>Abdelaziz El Aouni and Salah EddineNaimi</i>
<b>10:15-10:30</b>	Study of the hybrid solar energy supply of a Mobile Services Unit (MSU) (ID: 122). <i>Abdelkrim Laabid</i>
<b>10:30-10:45</b>	A hybrid HGWO-PSO approach for combined economic emission dispatch problem optimization (ID: 151). <i>Naima Agouzoul, Faissal El Mariami, Aziz Oukennou, Ali Tarraq and RabiaaGadal</i>
<b>10:45-11:00</b>	Variable Structure Automatic Systems Models for Greenhouse and Energy Processes (ID: 153). <i>Nacer Msirdi and Fabrice Aubepart</i>
<b>11:00-11:15</b>	Impact of wind power integration on the Moroccan electrical grid reliability (ID: 155). <i>Mohammed El Fahssi, Taoufik Ouchbel, Smail Zouggar, Mohamed Larbi El Hafyani, Mohamed Oukili, Mohamed Maaouane and Mohammed Chennaif</i>
<b>11:15-11:30</b>	Development of an energy management approach in a residential building integrating renewable energies (ID: 158). <i>Abdelouahid Youssefi, Noudi Nsangou Mama and Abdallah Saad</i>

<b>11:30-11:45</b>	Evaluation of Photovoltaic, wind and hybrid energy systems for the Power-to-Hydrogen (PtH) concept in Eastern Morocco (ID: 34). <i>Samir Touili, Salaheddine Amrani, Hanane Ait Lahoussine Ouali, Ahmed Alami Merrouni and Hassane Dekhissi</i>
<b>11:45-12:00</b>	Solar panels end of life recycling (ID: 175). <i>Michele Calì and Alberto Acri</i>

<b>Session II-1</b>  <b>Saturday, May 21, 2022</b>  <b>15:00 -16:30</b>  <b>17:00 – 19:00</b>	<b>Solar Energy–Thermal (1)</b>  <b>Chairs :</b>  <b>Antonio Gagliano, Catania University, Italy</b> <b>Ahmed Alami Merrouni, FSO, Mohamed First University, Morocco</b> <b>Elmiloud Chaabelasri, FSO, Mohamed First University, Morocco</b>
<b>15 :00 -15 :15</b>	Mathematical Modeling of the serpentine configuration evaporator for the construction of mini solar tower project in Oujda, Morocco (ID: 12) <i>Firyal Latrache, Zakia Hammouch, Benaissa Bellach and Mohammed Ghammouri</i>
<b>15 :15 -15 :30</b>	Energy performances of a photovoltaic thermal plant using different coolant nanofluid(ID: 13) <i>Antonio Gagliano, Bekkay Hajji, Stefano Aneli, Giovanni Mannino and Giuseppe Tina</i>
<b>15 :30 -15 :45</b>	Simulation & Comparative Study of the Effect of the Wet and Dry Cooling Modes on the performance of Par-abolic Trough Solar Thermal Power Plants in the Arid Zone of Morocco (ID:18). <i>Hanane Ait Lahoussine Ouali, Mujeeb Iqbal Soomro, Samir Touili and Ahmed Alami Merrouni</i>
<b>15 :45 -16 :00</b>	Simulation and yield analysis of a Solar Tower Plant Combined with Seawater Desalination System in the Mediterranean Area (ID: 20) <i>Hanane Ait Lahoussine Ouali, Mujeeb Iqbal Soomro, Samir Touili and Ahmed Alami Merrouni</i>
<b>16 :00 -16 :15</b>	Improvement of the mirror cleanliness control methodology in a concentrating solar power (CSP) power plant (ID: 52) <i>Fatima-Ezahra El Haddad, Yousra Jbari and Souad Abderafi</i>
<b>16 :15 -16 :30</b>	Development of a new monitoring method for rotating machines based on Maintenance 4.0, a case study of unbalance and misalignment (ID: 56) <i>El Mahdi Bouyahrouzi and Bachir El Kihel</i>

<b>17 :00 -17 :15</b>	CSP mirror soiling modeling from measured weather factors and forecasting using OpenWetheatmap server (ID: 62) <i>Ayoub Oufadel, Alae Azouzoute, Massaab El Ydrissi, Hicham Ghennoui, El Ghali Bennouna and Aicha Alami Hassani</i>
<b>17 :15 -17 :30</b>	Modeling a Real-Time Prediction System for Solar Collector Reflectivity Using Fuzzy Petri Net (ID: 68). <i>Abdelilah Serji, El Bekkaye Mermri and Mohammed Blej</i>
<b>17 :30 -17 :45</b>	Numerical Modeling of a Two-Dimensional Multiphase Flow through a porous Dam-Break (ID: 75). <i>Abderrahmane Kaouachi, Salah Daoudi and Imad Elmahi</i>
<b>17 :45 -18 :00</b>	High Order Scheme For Numerical Simulation of an Oblique Shock Over a Ramp (ID: 80). <i>Youssef Es-Sabry, Hind Talbi, Elmiloud Chaabelasri and Najim Salhi.</i>
<b>18 :00 -18 :15</b>	Numerical modeling of partial dam-break over mobile bed: very fine sand case (ID: 108). <i>Sanae Jelti and Abdelhafid Serghini</i>
<b>18 :15 -18 :30</b>	Study effect of nanofluids on the performance enhancement of PV/T collector (ID: 112) <i>Safae Margoum, Chaimae El Fouas, Bekkay Hajji, Stefano Aneli, Antonio Gagliano, Giovanni Mannino and Marco Tina Giuseppe</i>
<b>18 :30 -18 :45</b>	Performances comparison of PV/T solar plants with Roll-bond and Sheet-and –tube absorbers (ID: 137). <i>Chaimae El Fouas, Mohamed Hajji, Oussama El Manssouri, Bekkay Hajji, Antonio Gagliano and Giuseppe Marco Tina</i>
<b>18 :30-19 :00</b>	Assessing the thermal performance of traditional and modern building materials for hot and arid climate. Case study: Er-Rachidia Morocco (ID: 7). <i>Ali Lamrani Alaoui, Abdel-Illah Amrani, Ahmed Alami Merrouni, Abdelkarim Daoudia, Youssef El Hassouani, Elmiloud Chaabelasri and Halimi Mohammed</i>

<b>Session II-2</b> <b>Saturday, May21, 2022</b> <b>17 :00 -19 :00</b>	<b>Solar Energy–Thermal (2)</b>  <b>Chairs :</b> Iamd El Mahi, ENSA, Mohamed First University, Morocco Najim Salhi, FSO, Mohamed First University, Morocco Giuseppe Marcio Tina, University of Catania, Italy
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<b>17 :00 -17 :15</b>	CFD Simulation of Different Parts of a Hybrid Solar Collector (ID: 142). <i>Oussama El Manssouri, João Silva, Bekkay Hajji, José Teixeira, Senhorinha Teixeira and Mohammed Hajji</i>
<b>17 :15 -17 :30</b>	Numerical and parametric analysis of nanofluid-based PV/T system for hydrogen production (ID: 146). <i>Safae Margoum, Chaimae El Fouas, Mohamed Hajji, Bekkay Hajji and Abdelhamid Rabhi.</i>
<b>17 :30 -17 :45</b>	Numerical Analysis of Heat Transfer in a Solar Collector Submitted the Flow of Nanofluid (ID: 165). <i>Fatima Zahra Barhdadi, Ikrame Jamal, Kamal Amghar and Salah Daoudi</i>
<b>17 :45 -18 :00</b>	Numerical investigation on ejector optimization and performance using the refrigerant R-134a (ID: 166). <i>Ikrame Jamal, Fatima Zahra Barhdadi, Kamal Amghar and Salah Daoudi</i>
<b>18 :00 -18 :15</b>	Optimization of industrial energy efficiency by intelligent predictive maintenance tools, case of coupling misalignment and unbalance for an industrial system (ID: 167). <i>Yousra El Kihel, Amar Bakdid and Ali El Kihel</i>
<b>18 :15 -18 :30</b>	The influence of Reynolds number and baffles on the thermos-hydrodynamic behavior of circular pipe in three dimensions (ID: 172). <i>Jamal-Eddine Salhi, Nassreddine Hmidi, Tarik Zarrouk, Abdel-Illah Amrani, Ahmed Alami Merrouni, Elmiloud Chaabelasri, Merzouki Salhi and Najim Salhi</i>
<b>18 :30 -18 :45</b>	Modeling of the magnetohydrodynamic flow of the nanofluid confined between two parallel plates (ID: 85). <i>Manar Ennaouri and El-Kaber Hachem</i>
<b>18 :45-19 :00</b>	Renewable energy regulation in Morocco. <i>Dr.Farid Bentaha, FSJES, Mohamed First University, Morocco</i>

<b>Session III-1</b>  <b>Saturday, May 21, 2022</b>  <b>15 :00 -16:15</b>	<b>Power Electronics and Control System (1)</b>
	<b>Chairs :</b>  <b>Abdelhamid Rabhi, Université de Picardie Jules Verne, France</b> <b>Guillaume Caron, Université de Picardie Jules Verne, France</b> <b>Abdelhafid Messaoudi, EST, Mohamed First University, Morocco</b>

<b>15:00-15:15</b>	Impact of Grid connected Photovoltaic System in the Power Quality of a Transmission Network - Harmonics (ID: 22). <b><i>Mohamed Dib, Ali Nejmi and Mohamed Ramzi</i></b>
<b>15 :15 -15 :30</b>	Nonlinear control of a three-phase, double stage grid-tied photovoltaic system (ID: 27). <b><i>Salwa Naddami, Najib Ababssi and Mohcine Mokhlis</i></b>
<b>15 :30 -15 :45</b>	Experimental test of a three phase inverter using a Launchpad TMS320F28379D Card (ID: 44). <b><i>Chaymaa Boutahiri, Ayoub Nouaiti, Aziz Bouazi and Abdallah Marhraoui Hsaini</i></b>
<b>15 :45 -16 :00</b>	Efficient Fuzzy-Logic MPPT Controls For Sudden Change in Load (ID: 53). <b><i>Boutaybi Mohammed, Khelifi Yamina and Hajji Bekkay</i></b>
<b>16 :00 -16 :15</b>	A Nonlinear Control of Energy Storage System-PV-based Stand-Alone DC-Microgrid(ID: 72). <b><i>Brahim Khalil Oubbati, Abdelhamid Rabhi, Soufyane Benzaouia, Mohamed Boutoubat, Mohammed Belkheiri and Youcef Oubbati</i></b>

<b>Session III-2</b> <b>Sunday, May 22, 2022</b> <b>10 :00 -11 :15</b>	<b>Power Electronics and Control System (2)</b>
	<b>Chairs :</b>  <b>Aziz Naamane, University of Marseille, France.</b> <b>Samail Zoggar, EST, Mohamed First University, Morocco</b> <b>Aziz Abdelhak, EST, Mohamed First University, Morocco</b>
<b>10 :00 -10 :15</b>	Real Time Control for PMSG System Without Mechanical Sensor (ID: 115). <b><i>Badreddine Lahfaoui</i></b>
<b>10 :15 -10 :30</b>	New Strategy for Unbalance Compensation based on PWM AC-Chopper for Railway Applications (ID: 117). <b><i>Ismail Mir, Anas Benslimane, Jamal Bouchnaif, Badreddine Lahfaoui, YassineAyat and Mimoun Yandouzi</i></b>
<b>10 :30 -10 :45</b>	Evaluation of an MPPT DC-DC Boost controller using a PV Emulator based Test System (ID: 127). <b><i>Mohammed Chaker, DrissYousfi, Mohammed Essoufi and Amine El Hour</i></b>
<b>10 :45 -11 :00</b>	Introduction of a correction factor for predicting real Stirling engine efficiency based on ideal adiabatic modeling (ID: 140). <b><i>Kaoutar Laazaar and Noureddine Boutammachte</i></b>
<b>11 :00 -11 :15</b>	Enhancement of Standalone PMSG Wind Turbine System Utilizing Non Linear Proportional Integral Control Technique (ID: 156). <b><i>Ahmed Elgharib, Soufyane Benzaouia and Aziz Naamane</i></b>

<b>Session IV</b> <b>Saturday, May 21, 2022</b> <b>10 :00 -11 :30</b>	<b>Electric Vehicle</b>
	<b>Chairs :</b> <b>Driss Yousfi, Mohamed First University, Morocco</b> <b>Nacer Msirdi, Aix Marseille Université, Marseille, France.</b> <b>Omar Mokhtari, EST, Mohamed First University, Morocco</b>
<b>10 :00 -10 :15</b>	NARX Black-box Modeling of a Lithium-ion Battery Cell Based on Automotive Drive Cycles Measurements (ID: 23). <i>Jaouad Khalfi, Najib Boumaaz, Abdallah Soulmani, Sara Laafar, Asmaa Maali and El Mehdi Laadissi</i>
<b>10 :15 -10 :30</b>	Design and demonstrate an attack strategy to control a vehicle's computer by targeting its electrical network (ID: 38). <i>Mohammed Karrouchi, Abdelhafid Messaoudi, Kamal Kassmi, Ismail Nasri and Jalal Blaacha</i>
<b>10 :30 -10 :45</b>	Real-Time Power Management Strategy of Battery/Supercapacitor Hybrid Energy Storage System for Electric Vehicle (ID: 99). <i>Mohammed-Amine Mossadak, Ahmed Chebak, Nada Ouahabi and Abdelhafid Ait Elmajoub</i>
<b>10 :45 -11 :00</b>	Controlling Powered Two-Wheeled vehicles in bends using machine learning (ID: 135). <i>Fakhreddine Jalti, Bekkay Hajji and Abderrahim Mbarki</i>
<b>11 :00 -11 :15</b>	Modeling and Analysis of a Fuel Cell-Battery Hybrid Electric Vehicle (ID: 143). <i>Mohammed Essoufi, Bekkay Hajji and Abdelhamid Rabhi</i>
<b>11 :15 -11 :30</b>	Interleaved Boost Converter Control Technique Improvements for Fuel Cell Electric Vehicles (ID: 160). <i>Soufyane Benzaouia, Nacer M'Sirdi, Abdelhamid Rabhi, Brahim Khalil Oubbatî and Smail Zouggar</i>

<b>Session V-1</b> <b>Friday, May 20, 2022</b> <b>15:00-16:45</b>	<b>Electronics and biomedical Applications (1)</b>
	<b>Chairs :</b> <b>Jerome Launay, LAAS-CNRS, Toulouse, France</b> <b>Ali Ahitouf, FST, University of Sidi Mohamed Ben Abdellah, Morocco</b> <b>Naimi Salah Eddine, Mohamed First University, Morocco</b>

<b>15:00 -15:15</b>	Design and optimization of a WPT system for powering biomedical implants (ID: 47). <b><i>Brahim Ouacha, Hamid Bouyghf, Mohammed Nahid and Said Abenna</i></b>
<b>15:15 -15:30</b>	Prediction of Port A Cath complications using machine learning techniques (ID: 49). <b><i>Hanane El Oualy, Bekkay Hajji, Adel Mellit, Mouhsine Omari, Kamal Ahsayan and Hamid Madani</i></b>
<b>15:30 -15:45</b>	Fast and Accurate Color Image Classification Based on Quaternion Tchebichef Moments and Quaternion Convolutional Neural Network (ID: 59). <b><i>Abdelmajid El Alami, Abderrahim Mesbah, Nadia Berrahou, Aissam Berrahou, Mohammed Ouazzani Jamil and Hassan Qjidaa</i></b>
<b>15:45 -16:00</b>	Slew-Rate Enhancement of a Full-on Chip CMOS LDO based on a Capacitorless Push-pull Current Booster Circuit (ID: 96). <b><i>Kamal Zared, Hatim Ameziane, Hicham Akhamal, Hassan Qjidaa, Aicha Alami Hassani and Mohammed Ouazzani Jamil</i></b>
<b>16:00 -16:15</b>	Telemedicine in the era of Covid-19: Teleconsultation architecture platform ( ID: 100). <b><i>Yassine Ayat, Ali El Moussati and Ismail Mir</i></b>
<b>16:15 -16:30</b>	SiNW-ISFET sensor modeling using the k-nearest neighbor machine learning (ID: 110). <b><i>Nabil Ayadi, Bekkay Hajji, Ahmet Lale, Launay Jerome and Temple-Boyer Pierre</i></b>
<b>16:30 -16:45</b>	Portable device for real-time monitoring of blood samples (ID: 111). <b><i>Yassine Ayat, Ali El Moussati, Mohammed Choukri, Ismail Mir and Anas Benslimane</i></b>

<b>Session V-2</b> <b>Friday, May 20, 2022</b> <b>11:15 – 12:45</b>	<b>Electronics and biomedical Applications (2)</b>
	<b>Chairs :</b>
	<b>Pierre-Temple-Boyer, LAAS-CNRS, Toulouse, France</b>
	<b>Kamal Kassmi, EST, Mohamed First University, Morocco</b>
	<b>Ali El Moussati, ENSA, Mohamed First University, Morocco</b>
<b>11:15 -11:30</b>	The use of GA and PSO algorithms to improve the limitations of a readout circuit of an pH-ISFET sensor (ID: 119). <b><i>Abdelkhak Harrak and Salah Eddine Naimi</i></b>
<b>11:30 -11:45</b>	Modeling of electromagnetic field effects on interconnections between high frequency deep sub-micrometer CMOS integrated circuits using FDTD technique ( ID: 145). <b><i>Youssef Nadir, Khaoula Ait Belaid, Hassan</i></b>

	<b><i>Belahrach, Abdelilah Ghammaz, Aze-Eddine Naamane and Mohammed Radouan</i></b>
<b>11:45 -12:00</b>	Development and experimentation of an automotive diagnostic tool for Headlamp ECU based on the UDS (ID: 163). <b><i>El Mahri Meryam, Jarou Tarik, Sefrioui Ihssane, El Idrissi Sofia and Abdouni Jawad</i></b>
<b>12:00 -12:15</b>	Design and experimentation of an automatic communication tool for automotive cards such as BCM and smart junction box (ID: 164). <b><i>Ihssane Sefrioui, Tarik Jarou, Meryam El Mahri, El Idrissi Sofia and Jawad Abdouni</i></b>
<b>12:15 -12:30</b>	Portable Ultrasound sensors System for Breast cancer early diagnosis (ID: 173). <b><i>Ghita Zaz, Mohssin Zekriti and Latifa Fakri Bouchet</i></b>
<b>12:30 -12:45</b>	Cough detection for prevention against the COVID-19 pandemic (ID: 174). <b><i>Btissam Bouzammour, Ghita Zaz, Malika Alami Marktani, Ali Ahaitouf and Mohammed Jorio</i></b>

<b>Session VI-1</b>		<b>Materials and Devices Applications (1)</b>
<b>Friday, May 20, 2022</b>		<b>Chairs :</b>
<b>11:15 -13 :00</b>		Anne Migan Dubois, Central Supelec-CNRS, France Bria Driss, Mohamed First University, Morocco
<b>15:00 – 16:00</b>		El Kihel Bachir, ENSA, Mohamed First University, Morocco Farid Falyouni, Mohamed First University, Morocco
<b>11:15 -11:30</b>		Improvement of Silicon Nanowire based Photovoltaic Solar Cell with the Integration of CIGS Quantum Wells (ID: 4). <b><i>Abdelkader Aissat, Meriem Safi, HoucineGuesmi and Jean Pierre Vilcot</i></b>
<b>11:30 -11:45</b>		Intersubband Optical Properties of InAsSb/AlGaAs Quantum Well Structure (ID: 5). <b><i>Lynda Chenini, Abdelkader Aissat, Jean Pierre Vilcot</i></b>
<b>11:45 -12:00</b>		Numerical simulation: towards high efficiency CIGS solar cell through buffer layer replacement (ID: 14). <b><i>Mohamed Abdallah Bendoumou, AbderrahimRaidou, AtikaFahmi, Mohamed Lharch and MounirFahoume</i></b>
<b>12:00 -12:15</b>		Influence of an Alternating Phase on the Electron Heating in Capacitively Coupled Radio-frequency Discharges (ID: 15). <b><i>Abdelhak Missaoui, Morad El Kaouini and Hassan Chatei</i></b>

<b>12:15 -12:30</b>	Theoretical study of the sensitivity of the localized electronic states induced by the presence of defects in a ZnO/ Zn <sub>1-X</sub> Mg <sub>X</sub> O MQWs under hydrostatic pressure and temperature (ID: 104). <i>Abdelkader Baidri, Fatima Zahra Elamri, Farid Falyouni, Youssef Ben-Ali and Driss Bria</i>
<b>12:30 -12:45</b>	Simultaneous Effects of Hydrostatic Pressure and Temperature on the Transport of an Electron in AlGaAs Cylindrical Quantum Wire sandwiched between two GaAs Cylindrical Quantum Well Wires (ID: 107). <i>Mohammed Rida Qasem, Youssef Ben-Ali, Farid Falyouni and Driss Bria</i>
<b>12:45 -13:00</b>	Analysis of 2D simulation of Hydrogenated Silicon Nitride Plasma Discharge in CCP Reactor for Thin Film Solar Cell Deposition (ID: 63). <i>Meryem Grari, Yassmina Guetbach, Sara Said, Cifallah Zoheir and Abdenacer Essalhi</i>
<b>15:00 -15:15</b>	
<b>15:00 -15:15</b>	Effect of next nearest neighbors intersite coupling on the band structure of a one-dimensional photonic crystal (ID: 82). <i>Mohamed El Ghafiani, Yamina Rezzouk, Soufyane Khattou, Madiha Amrani, Mohammed Moutaouekkil and El Houssaine El Boudouti</i>
<b>15:15 -15:30</b>	Y-shaped demultiplexer based on asymmetric loops photonic waveguides (ID: 92). <i>Mimoun El-Aouni, Youssef Ben-Ali, Ilyass El Kadmiri and Driss Bria</i>
<b>15:30 -15:45</b>	Y-shaped demultiplexer based on asymmetric loops photonic waveguides (ID: 92). <i>Mimoun El-Aouni, Youssef Ben-Ali, Ilyass El Kadmiri and Driss Bria</i>
<b>15:45 -16:00</b>	Narrow Localized Electronic States Induced By Defective Electronic Comb-Like Quantum Wires (ID: 94). <i>Siham Machichi, Fatima Zahra Elamri, Youssef Ben-Ali, Farid Falyouni and Driss Bria</i>

<b>Session VI-2</b> <b>Saturday, May 21, 2022</b> <b>17:00 -18 :15</b> <b>Sunday, May 22 2022</b> <b>10 :00 – 11 :30</b>	<b>Materials and Devices Applications (2)</b>
<b>Chairs :</b> <b>El Houssaine El Boudouti, Mohamed First University, Morocco</b> <b>Aissat Abdelkader, University of Blida, Algeria</b> <b>Abdelaaziz El Moussaouy, Mohamed First University, Morocco</b> <b>Farid Falyouni, Mohamed First University, Morocco</b>	

<b>17:00 -17:15</b>	Zak phase and topological Tamm states between two photonic comb structures (ID: 97). <i>Soufyane Khattou, Yamina Rezzouk, Madiha Amrani, Mohamed El Ghafiani, El Houssaine El Boudouti and Bahram Djafari-Rouhani</i>
<b>17:15 -17:30</b>	High-Q resonant modes in periodic stubbed structure (ID: 102). <i>Yamina Rezzouk, Mohamed El Ghafiani, Soufyane Khattou, Madiha Amrani, El Houssaine El Boudouti, Abdelkrim Talbi and Bahram Djafari Rouhani</i>
<b>17:30 -17:45</b>	Computational simulation of high efficiency HTL-free Sb2Se3 based solar cell (ID: 24). <i>Abdellah Benami, Abdelmajid El Khalifi, Lhoussayne Et-Taya, Lahoucine Elmaimouni and Youssef Achenani</i>
<b>17:45 -18:00</b>	Optimization Of Cd-free CZTSSeKesterite Device with Different BSF Layers By SCAPS-1D (ID: 25). <i>Lhoussayne Et-Taya and Abdellah Benami</i>
<b>18:00 -18:15</b>	Hydrostatic pressure and temperature effects on linear and nonlinear optical properties in 2D ultra-thin quantum dot (ID: 131). <i>Mohammed Hbibi, Omar Mommadi, Soufiane Chouef, Reda Boussetta, Laaziz Belamkadem, Abdelaaziz El Moussaouy, Juan Alejandro Vinasco, Carlos Alberto Duque and Farid Falyouni</i>
<b>Sunday, May 22, 2022 10 :00 – 11 :30</b>	
<b>10:00 -10:15</b>	Size effect of spindle toroidal quantum dot on electronic properties (ID: 132). <i>Reda Boussetta, Omar Mommadi, Laaziz Belamkadem, Soufiane Chouef, Mohammed Hbibi, Abdelaaziz El Moussaouy, Juan Alejandro Vinasco, Carlos Alberto Duque and Abdelhamid Kerkour El Miad</i>
<b>10:15 -10:30</b>	Impact of electric field strength on the binding energy of an off-center donor in quantum ring: quarter cross section case (ID: 133). <i>Soufiane Chouef, Omar Mommadi, Reda Boussetta, Mohammed Hbibi, Laaziz Belamkadem, Abdelaaziz El Moussaouy, Juan Alejandro Vinasco, Carlos Alberto Duque and Farid Falyouni</i>
<b>10:30 -10:45</b>	Donor atom properties in 2D ultra-thin cylindrical quantum dots (ID: 134). <i>Laaziz Belamkadem, Omar Mommadi, Reda Boussetta, Soufiane Chouef, Mohammed Hbibi, Abdelaaziz El Moussaouy, Juan Alejandro Vinasco, Carlos Alberto Duque and Abdelhamid Kerkour El Miad</i>
<b>10:45 -11:00</b>	Numerical analysis of various Hole transport material (HTM) for an efficient perovskite solar cell (ID: 138). <i>Touria Ouslimane, Abdellah Benami and Lhoussayne Et-Taya</i>

<b>11:00 -11:15</b>	Photonic Flat Bands of asymmetric Star Waveguides Structure (ID: 144). <i>Younes Errouas, Youssef Ben-Ali, Ilyass El Kadmiri and Driss Bria</i>
<b>11:15 -11:30</b>	Binding energy of an off-center shallow donor impurity in wedge-shaped quantum dot under electric field effect (ID: 152). <i>Mohamed Chnafi, Omar Mommadi, Soufiane Chouef, Reda Boussetta, Laaziz Belamkadem, Mohammed Hbibi, Abdelaziz El Moussaouy, Juan Alejandro Vinasco, Carlos Alberto Duque and Farid Falyouni</i>

<b>Session VII-1</b> <b>Saturday, May 21, 2022</b> <b>10:00 -11:30</b>	<b>IoT and Machines learning methods (1)</b>  <b>Chairs :</b> <b>Jamal Ezzahar, Université Cadi AyyadMarakech, Morocco</b> <b>Amine Koulali, ENSA, Mohamed First University, Morocco</b> <b>Abdelilah Ghammaz, Université Cadi Ayyad Marakech, Morocco</b>
<b>10:00 -10:15</b>	Synergy of Sentinel-1 and Sentinel-2 satellites for surface soil moisture retrieval over wheat crops in semi-arid areas (ID: 28). <i>Nadia Ouaadi, Jamal Ezzahar, Lionel Jarlan, Saïd Khabba and Pierre Luis Frison</i>
<b>10:15 -10:30</b>	Smart-greenhouse with plant diseases classification using deep Convolutional Neural Networks (ID: 39). <i>Adel Mellit and Bekkay Hajji</i>
<b>10:30 -10:45</b>	IoT Based Data Acquisition and Remote Monitoring System for Large-Scale Photovoltaic Power Plants (ID: 41). <i>Muhammet SamilKalay, BeyhanKılıç, Adel Mellit, Bülent Oral and Şafak Sağlam</i>
<b>10:45 -11:00</b>	An Intrusion Detection System Using Machine Learning for Internet of Medical Things (ID: 84). <i>Idriss Idrissi, Mohammed Boukabous, MounirGrari, Mostafa Azizi and Omar Moussaoui</i>
<b>11:00 -11:15</b>	Predicting Intensive Care Unit Admission using Machine and Deep Learning: COVID-19 Case Study (ID: 95). <i>Mohammed Boukabous, Idriss Idrissi, Mounir Grari, Mostafa Azizi and Omar Moussaoui</i>

<b>11:15 -11:30</b>	Neural network-based precision irrigation scheduling and crop water stress index (CWSI) assessment (ID: 116). <i>Mohammed Benzaouia, Bekkay Hajji, Hassan Mokhtari and Khalid Chaabane</i>
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<b>Session VII-2</b> <b>Friday, May20, 2022</b> <b>15:00 -16 :00</b>	<b>IoT and Machines learning methods (2)</b>
<b>Chairs :</b>	<b>Saad Bennani, ENSA, Sidi Mohamed Ben Abdellah University, Morocco</b> <b>Moussaoui Omar, EST, Mohamed First University, Morocco</b> <b>Tarik Jarou, ENSA, Ibn Tofail University</b>
<b>15:00 -15:15</b>	IoTScal-SC2: A Based Collaboration Solution with Two Cloud Computing Systems for Scalability Issue in IoT Networks (ID: 136). <i>Abdellah Zyane, Mohammed Nabil Bahiri and Abdelilah Ghammaz</i>
<b>15:15 -15:30</b>	An effective ensemble learning method for fault diagnosis of photovoltaic arrays (ID: 141). <i>Adel Mellit and Sahbi Boubaker</i>
<b>15:30 -15:45</b>	A Lightweight Deep Learning Model for Forest Fires Detection and Monitoring (ID: 154). <i>Mimoun Yandouzi, IdrissIdrissi, Mohammed Boukabous, Mounir Grari, Omar Moussaoui, Mostafa Azizi, Kamal Ghoumid and Aissa Kerkour Elmiad</i>
<b>15:45 -16:00</b>	A review on precision irrigation techniques and controls for better water use efficiency in agriculture (ID: 157). <i>Hassan Mokhtari, Mohammed Benzaouia, Bekkay Hajji and Khalid Chaabane</i>

<b>Session VIII-1</b> <b>Saturday, May 21, 2022</b> <b>15:00 -16:30</b>	<b>Communication, Networks and Information technology (1)</b>
	<b>Chairs :</b> <b>Abdesslam Boutayeb, Mohamed First University, Morocco</b> <b>Abderrahim Mbarki, ENSA, Mohamed First University, Morocco</b> <b>Abdellah Zyane, ENSA, Université Cadi Ayyad Marakech, Morocco</b>
<b>15:00 -15:15</b>	A Fuzzy Logic based intrusion detection system for WBAN against jamming attacks(ID: 6). <i>Asmae Bengag, Amina Bengag, Omar Moussaoui and Mohamed Blej</i>
<b>15:15 -15:30</b>	An Enhanced Approach based on PCA and ACO Methods for Facial Features Optimization (ID: 16). <i>Chaimaa Khoudda, El Miloud Smaili, Salma Azzouzi and My El Hassan Charaf</i>
<b>15:30 -15:45</b>	The GPSR Routing protocol in VANETs: Improvements and analysis (ID: 21). <i>Amina Bengag, Asmae Bengag and Mohamed El Boukhari</i>
<b>15:45 -16:00</b>	The dynamics of a population of healthy adults, overweight/obese, diabetics with and without complications in Morocco (ID: 40). <i>Mohamed Lamlili, Wiam Boutayeb and Abdesslam Boutayeb</i>
<b>16:00 -16:15</b>	Dermatologist-level classification of skin cancer with Level Set method and Isolation Forest (ID: 43). <i>Bellaj Khalid, Benmir Mohammed and Soumaya Boujena</i>
<b>16:15 -16:30</b>	A Generalized Freeman Chain Code for Offline Arabic Character Recognition (ID: 51). <i>Mohammed Kadi, M'Barek Nasri and Youssef Douzi</i>

<b>Session VIII-2</b> <b>Saturday, May 21, 2022</b> <b>10:00 -11:45</b>	<b>Communication, Networks and Information technology (2)</b>  <b>Chairs :</b> <b>Amine Koulali, ENSA, Mohamed First University, Morocco</b> <b>M'Barek Nasri, EST, Mohamed First University, Morocco</b> <b>Abderrahim Mbarki, ENSA, Mohamed First University, Morocco</b>
<b>10:00 -10:15</b>	Performing Spectrum Sensing using a Deep Learning algorithm for Cognitive Radio (ID: 54). <i>Omar Serghini, Hayat Semlali, Asmaa Maali, Najib Boumaaz, Abdallah Soulmani and Abdelilah Ghammaz</i>
<b>10:15 -10:30</b>	A retrospective on OOADARE as an automated object-based approach for requirements engineering (ID: 61). <i>Amal Khalil, Zineb Bugroun, Hajar Lamsellak, Mohammed Ghaouth Belkasmi and Mohammed Saber</i>
<b>10:30 -10:45</b>	Computational analysis of human navigationtrajectories in the VR Magic Carpet™ using K-Means (ID: 69). <i>Ihababdelbasset Annaki, Mohammed Rahmoune and Mohammed Bourhaleb</i>
<b>10:45 -11:00</b>	COVID-19 SIEAR Model with sensitivity analysis (ID: 121). <i>Mohamed Derouich, Mohamed Lamlili E.N. and Abdesslam</i>
<b>11:00 -11:15</b>	Toward multi-label attribute estimation on multiple faces using CNN networks (ID: 126). <i>Mohammed Berrahal and Azizi Mostafa</i>
<b>11:15 -11:30</b>	New design of an X-band 2x2 patch array antenna with circular slots for nanosatellites (ID: 150). <i>Nabil El Hassainate, Ahmed Oulad Said and Zouhair Guennoun</i>
<b>11:30 -11:45</b>	The management of approaches in the decentralized architecture of the PBM (ID: 77). <i>Ammar Esaaid</i>

<b>20-22 May , 2022</b>	<b>Poster Session</b>
	<b>Chairs :</b>
	<b>El Ouariachi Mostafa, EST, Mohamed First University, Morocco</b> <b>Jamal Youssfi, EST, Mohamed First University, Morocco</b> <b>Anas Benslimane, ENSA, Mohamed First University, Morocco</b> <b>Rachid Benkaddour, EST, Mohamed First University, Morocco</b>
<b>Friday 20 May, 2022</b>	A New Approach to Protect Data and Detect Intrusion Attempts in CAN Bus (ID: 30). <b>Hajar Snoussi, Abdelhafid Messaoudi, Kamal Kassmi, Ismail Nasri and Mohammed Karrouchi</b>
<b>10:45 – 11:15</b>	Machine Learning and Deep Learning in Agriculture: An overview (ID: 76). <b>Hanae Al Kaddouri, Abdelmalek El Mehdi, Youssef Douzi and Yassine Zarrouk</b>
	Seven-Level Three-phase Photovoltaic Inverter with Harmonics Reduction injected in the Grid using SVPWM and SPWM improved controls (ID: 81). <b>Lamreoua Abdelhak, El Ouariachi Mostafa and Bouchnaif Jamal</b>
<b>Saturday 21May, 2022</b>	Climate Change and Precision Agriculture in the Mediterranean Agricultural Systems: Case study of Chaouia Plain, Morocco (ID: 83). <b>Mohamed Amine El Mzouri, Karima Samir, Mohamed Chlaida, Hanane Maadid and El Houssine El Mzouri</b>
<b>10:45 – 11:15</b>	Towards an understanding of road crashes: Taxonomy and analysis (ID: 90). <b>Soukaina El Ferouali, Zouhair Elamrani Abou Elassad and Abdelmounaim Abdali</b>
<b>Sunday 22May, 2022</b>	Backstepping Control Design for Maximum Power Point Tracking of a Photovoltaic system (ID: 105). <b>Fatima Ezzahra Jarmoumi and Ahmed Moutabir</b>
<b>11:15 - 11:45</b>	Design of ring oscillator-based-VCO for a pH-ISFET redout circuit ADC (ID: 109). <b>Abdelkhalek Harrak, Salah Eddine Naimi, Victor Medina, Smail Hassouni, Ruben Garvi and Luis Hernandez Corporales</b>
	Improved Method of Protecting Underground Cables in Hybrid Transmission Lines (ID: 162). <b>RoaLamrani, Tarik Jarou, YassineTaleb, Salma Benchikh and Elmehdi Nasri</b>
	Modelling and Simulation of a three-phase inverter two and three levels under MATLAB (ID: 87). <b>Abdlouhab Hamman and El-Kaber Hachem</b>