

# International Conference of Physics Students

August 11<sup>th</sup> – 17<sup>th</sup>, 2016

Program Booklet



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UNIVERSITY OF MALTA

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## **Merħba!**

Merħba bikhom (Welcome!)

On behalf of the organising committee, guest speakers, sponsors and volunteers, welcome to the 31<sup>st</sup> International Conference of Physics Students!

All of us have been drawn together here by our love of physics. We are continuously attempting to analyse the inner workings of the universe, decipher the secrets of reality and modelling physical phenomena. What better way to kindle this common interest than by exploring a new country amongst like-minded peers whilst participating in a series of intriguing talks, discussions, presentations and activities? This is what ICPS 2016 is all about.

A variety of events are planned out for this exciting week. There will be a variety of student contributions and guest lectures. Workshops will also be organised whereby students can exchange opinions amongst themselves in an informal environment. All mentioned activities are aimed at motivating an interdisciplinary and holistic interest in various fields of science amongst all participants.

An assortment of social events and activities have also been planned in order to liven up the evenings of the conference. These are a great opportunity for participants to get to know each other and relax. One of this years' highlight is the beach party, it will truly be a memorable event. We also invite you to join us in our Maltese night to immerse yourselves into our rich Mediterranean culture!

All in all, we guarantee that attending both lectures and social events will make for a fruitful ICPS experience. We encourage you to attend the IAPS' Annual General Meeting and hope you'll enjoy this eventful week full of physics and fun!

The ICPS organising committee



**IAPS**

### **Welcome Message by IAPS**

Dear participant,

Welcome to 31<sup>st</sup> edition of the International Conference of Physics Students, first one in Malta and the southernmost one. Your Maltese hosts have worked hard for two years to bring you this event and I hope that you repay them with completely immersing yourself in this bubble. For physics students by physics students, is the IAPS motto. This makes ICPS a special point in space-time.

The core missions of IAPS to support young physicists, encourage their growth, help them build a peaceful environment and promote international collaboration and knowledge exchange, mixed with a special group of participants like yours, results in a spirit no one else can create. Following this idea, our week together is the time for new friendships, experiences and growth. Through scientific, cultural and social events you will have the opportunity to do just that.

However, we must not forget what awaits outside of our bubble. Use what you are given here and be a game-changer. The world is what you make of it. Make it friendly.

Ana Milinović  
IAPS president

**What is IAPS?**

IAPS is an association of physics students and student societies from around the globe, working to promote peaceful collaboration amongst them. Our members are represented by national and local committees, who meet at the IAPS Delegate Day to ensure the relevance of our activities.

Since 1987, IAPS has worked continuously to support friendly relations between physics students. We support our members in their academic and professional work, as well as discussing and acting on scientific, social and cultural issues. IAPS is a recognised non-governmental organisation run entirely by students from around the world with a spirit of mutual understanding and equality. IAPS runs the annual International Conference of Physics Students (ICPS), the PLANCKS competition, visits to global research institutions, summer schools, exchange programs and multinational meetings all over the world. This year was a big one for IAPS, with many new projects and members. Be sure to check them out in jIAPS and online. Any questions you may have, please direct to Executive Committee.

IAPS collaborates with numerous international bodies amongst others: the European Physical Society, the Institute of Physics, the German Physical Society, the American Physical Society and the Informal Forum of International Student Organisations, which IAPS NC Croatia kindly hosted this May.



# 1. Conference Programme

## Thursday 11<sup>th</sup> August

- 10:00-18:30 Registration
- 18:30-20:00 Dinner
- 20:00-20:30 Transportation
- 20:30-22:00 Conference opening and guest lecture by Dr André Xuereb
- 22:00-01:00 Conference reception

## Friday 12<sup>th</sup> August

- 07:30-09:00 Breakfast
- 08:00-14:30 Excursion
- 15:00-16:30 Student lectures
- 17:00-18:30 Guest lecture by Dame Jocelyn Bell Burnell
- 18:30-20:00 Dinner and preparations for Nations' evening
- 21:00-01:00 Nations' evening

## Saturday 13<sup>th</sup> August

- 07:30-09:00 Breakfast
- 09:30-11:00 Student lectures
- 11:30-13:00 Workshops
- 13:00-14:30 Lunch
- 14:30-17:30 Student lectures incl. coffee break
- 18:00-20:00 Dinner
- 20:30-21:30 Science Slam
- 21:30-01:00 Lejla Maltija (Maltese night)



**Sunday 14<sup>th</sup> August**

07:30-09:00	Breakfast
09:30-13:00	Student lectures incl. coffee break
13:00-14:00	Lunch
14:00-18:30	AGM or Beach Trip
18:30-20:00	BBQ at Surfside
20:00-01:00	Night by the beach

**Monday 15<sup>th</sup> August**

07:30-09:00	Breakfast
09:30-11:00	Student lectures
11:30-13:00	Guest lecture by Prof Mark McCaughrean
13:00-14:30	Lunch
14:30-16:00	Student lectures
16:30-18:00	Poster session
18:30-20:00	Dinner
20:30-00:00	Free night/City tour

**Tuesday 16<sup>th</sup> August**

07:30-09:00	Breakfast
09:30-11:00	Student lectures
11:30-13:00	Guest lecture by Dr Anthony Galea
13:00-14:30	Lunch
14:30-16:00	Guest lecture by Dr Alessio Magro
16:00-16:30	Group photo
16:30-18:00	IAPS Workshops
18:30-20:00	Dinner
20:30-01:00	Conference closing

**Wednesday 17<sup>th</sup> August**

07:30-09:00	Breakfast
09:30-onwards	Optional trip to Gozo

## 1.1 Guest Lectures

One of the highlights of ICPS is the opportunity of attending lectures held by prominent physicists. For this year's ICPS we have managed to get in touch with some amazing speakers.

Dame (Susan) Jocelyn Bell Burnell, DBE, FRS, PRSE FRAS (born 15 July 1943) is a Northern Irish astrophysicist. As a postgraduate student, she discovered the first radio pulsars - the by-products of supernova explosions which make all life in the universe possible. Bell Burnell was President of the Royal Astronomical Society from 2002 to 2004, president of the Institute of Physics from October 2008 until October 2010, and was interim president by early 2011. Bell Burnell was elected President of the Royal Society of Edinburgh in October 2014. In March 2013 she was elected Pro-Chancellor of the University of Dublin.



Prof Mark McCaughrean is Senior Science Advisor in the Directorate of Science at the European Space Agency. He is also responsible for communicating results from ESA's astronomy, heliophysics, planetary, and fundamental physics missions to the scientific community and wider general public. Following a PhD from the University of Edinburgh, he worked at the NASA Goddard Space Flight Centre, followed by astronomical institutes in Tucson, Heidelberg, Bonn, and Potsdam, and taught as a professor of astrophysics at the University of Exeter before joining ESA in 2009. His personal scientific research involves observational studies of the formation of stars and their planetary systems, and he is also an Interdisciplinary Scientist for the NASA/ESA/CSA James Webb Space Telescope.

Dr André Xuereb read for his undergraduate BSc degree in mathematics and physics at the University of Malta. In 2007 he started reading for a PhD in the UK studying laser cooling of atoms at the University of Southampton, following which he spent some time as a post-doctoral researcher in Hanover in 2011. From 2011 to 2014 he was a fellow of the Royal Commission of the Exhibition of 1851, working closely with the Belfast quantum technologies group. In late 2014 he was awarded a faculty position in quantum optics and quantum information at the University of Malta. His current interests span from fundamental and technological applications of op-



tomechanics through to quantum thermodynamics.



Dr Anthony Galea is a resident academic lecturer at the Physical Oceanography Research Group (Department of Geosciences) within the University of Malta. He got his Ph.D. in 'Environmental and Industrial Fluid Mechanics' from the University of Trieste, in Italy. His research involves the numerical modelling (LES and RANS) of coastal areas to decipher the in-harbour sea currents and the turbulent water mixing within bays. He is also interested in numerical modelling of coastal/regional areas, computational fluid mechanics, and operational oceanography, and is an avid kayaker.

## 1.2 Student Contributions

This conference also gives students the opportunity to present and attend student lectures, posters or take part in the Science Slam! Participating in either event will make you eligible to win a prize.

### 1.2.1 Student Lectures

The student lectures help students sharpen their presentation skills, overcome the fear of presenting a topic to an academic audience and encourages students to question and discuss their topic of interest. During the conference 82 student lectures will be given, divided into two parallel sessions. Each lecture will be 15 minutes long with up to 3 minutes of question time.

### 1.2.2 Poster Session

The poster session will allow the participants to present their work in the form of a poster, give a short introduction about the poster itself and then be open for any questions. The poster session will be hosted on campus on August 15<sup>th</sup> with 43 posters contributed by the participants.

### 1.2.3 Science Slam

For the more experienced students, we suggest challenging yourself by taking part in the Science Slam titled "ZamSlam". This consists of giving a short 10 minute presentation in front of all the participants on any physics subject, with a catch: you must make people laugh! Five judges in audience will allocate points to the speaker, depending on how funny the presentation is.

## 1.3 Workshops

The ICPS will feature three parallel workshops held by physicists and physics students, where you will have the opportunity to discuss a topic and learn from those facing the same

issues as you are. Since these workshops will be held in parallel, you are able to participate in only one.

## 1.4 IAPS AGM

The Annual General Meeting comprises all members of IAPS, who are up to date with their subscriptions. Every member is welcome to attend.

The Annual General Meeting 2016 of IAPS will be held on Sunday, August 14<sup>th</sup> at 14:00 (UTC+2:00) at Microsoft Innovation Center (Skyparks Bussiness Center), Malta International Airport, Luqa, Malta.

It is recommended that all interested parties go together, so we will meet in front of university (quadrangle) at 13:00.

### Agenda

- Election of chair, secretary and tellers
- Membership
  - Voting right
  - New members
  - Expulsions
  - Quorum
- Approval of the minutes of the previous Annual General Meeting
- Auditors report and accounts of the previous Executive Committee
- Election of auditors
- Report on the work of the outgoing Executive Committee
- IAPS Reimbursement Guideline
- Code of Conduct
- IAPS IMAP grant 2016/2017
- Regulation changes
- PLANCKS General Rules
- IAPS School Day topic
- IAPS archivists
- EC structure for 2017/2018, jIAPS editor position
- Provisional budget and setting of membership fees for 2016/2017
- Final report of the ICPS 2015 Organising Committee
- Election of the host of ICPS 2018
- Progress report of the ICPS 2017 Organising Committee
- Final report of the PLANCKS 2015 Organising Committee
- Election of the host of PLANCKS 2018
- Progress report of the PLANCKS 2017 Organising Committee
- Election of Executive Committee members
- Other points of interest

## 1.5 IAPS Workshops

Three parallel workshops organised by the Executive Committee of IAPS will be available for people to attend. The topics of the workshops are as follows:

- Ambassador programme (Henrik Siboni, IAPS Executive Committee) & IAPS Contact Network (Sabrina Gronow, IAPS Executive Committee)
- Organise events with IAPS (Gerhard Dorn, PLANCKS '17 and Danielle Harper, NC UK)
- School Day (Sabrina Gronow and Ana Milinović, IAPS Executive Committee)

## 1.6 Social Events

Most days culminate with a themed evening. This is a great way to relax, chat and have fun. As a treat, we will also be organising an additional trip to Comino on the final day. ICPS will feature some well known evening gatherings by the conference alumni with a unique twist.

### Conference Opening

The Conference opening will be held at the University of Malta, Sir Temi Zammit auditorium. You are all encouraged to attend, as important information will be given in this welcoming session. Afterwards we will gather on the quadrangle for a chilled evening where a bar, music and a Pokemon gym will keep us entertained.

### Nations Evening

During the famous Nations Evening, every participating country gets to share part of their culture through traditional foods, drinks and songs. Be as creative as you can and bring along anything that you feel uniquely represents your country! Kitchens are available at the University Residence so you can prepare food there and then transport it to your assigned table. ps: remember to bring a country flag or maybe paint one on site!

### Lejla Maltija - Maltese Evening

A taste of our own cuisine will be available during the Maltese Evening, ranging from local beverages and wines to pastizzi (cheese cakes), bigilla (bean dip) and galletti (biscuits). The night will be animated with traditional maltese folklore songs and several traditional Maltese games. It will surely be a night to remember! Full of fun and activities for everyone!

### Night by the beach

One of this year's highlight is the night by the beach. Join us for a maltese barbecue at the wonderful seaside promenade of Tas-Sliema. Enjoy the sound of the Mediterranean summer sea as you enjoy a nice, cool drink and get to know the other participants!

### Free night / Imdina City tour

As usual, we will also have a free night, where the participants have several options as to how to spend the night. For those who like to party, we recommend hitting the clubs in Paceville. For a quieter night out, you can also join us for a wonderful city tour of Imdina,



Pastizzi (cheesecakes) and passju (traditional maltese game)



Surfside (Sliema) and Imdina by Night

followed by visiting to a local wine bar or quaint restaurant which offers traditional Maltese cuisine.

### Conference Closing

For the final official ICPS event for the conference. We will gather to discuss and relive the highlights of the week while also informing you about what the future holds next for ICPS. We hope that those both new and experienced with ICPS have thoroughly enjoyed the programme and we hope that it will not be your last!





## 2. Excursions

### Option 1

#### **Scientific part: METOFFICE**

The Maltese Meteorological Office within the Malta International Airport provides a range of comprehensive and authoritative products and services including 5 day forecasts, Marine forecasts, radar and satellite data and imagery, detailed weather data from various localities in Malta and Gozo, data for renewable wind and solar energy services, weather warning and hazards services (both civil and marine) as well as general monthly summaries.

The Maltese Meteorological Office's database is based on more than 5 million readings per year, each made up of several weather parameters. Mainly updated every minute, and every day of the year, these system provides a unique level of accuracy and information in its reporting.

#### **Cultural part: Ħaġar Qim and Mnajdra Temples**

Ħaġar Qim and Mnajdra are two megalithic temple complexes found on the Mediterranean island of Malta, dating from 3600-3200 BC. These Megalithic Temples are amongst the most ancient religious sites on Earth, described by the World Heritage Sites committee as "unique architectural masterpieces." In 1992 UNESCO recognised Ħaġar Qim together with three other Maltese megalithic structures as World Heritage Sites.

### Option 2

#### **Scientific part: MCCA - Metrology Directorate**

The Metrology labs at Kordin Business Incubation Centre have been progressively built up as of 2004. Today these facilities are capable of calibrating seven measurement quantities supported by state of the art equipment and highly skilled scientists and technicians. The fields of operation are in: Mass, Pressure, Length, Temperature, Electricity, Humidity, Time and Frequency.



### **Cultural part: Maritime Museum**

The Malta Maritime Museum is housed within the Old Naval bakery in Vittoriosa, it drafts Malta's maritime history which is tightly bound to Mediterranean Sea. It also illustrates the global nature of seafaring and its impact on society. The museum houses numerous artefacts highlighting different epochs, shaping Maltese seafaring through paint, charts, evidence and sea technology evolution. It shows Malta's maritime history from prehistory to the present day.

## **Option 3**

### **Scientific part: Life Sciences Park Malta**

Malta's Life Sciences Park offers locations for start-ups and existing companies and is geared towards advanced pharmaceutical research and business development. The Park's goal is to intensify cooperation in the areas of education, research and innovation by providing state of the art infrastructures, creating access to scarce expertise and increasing access to grants and funds. In doing so the park's mission is to become a leading district in the coming years. Ultimately, The Life Sciences Park represents a focal point connecting university students, researchers, lecturers, hospital professional staff and industry to interact and establish new technology and research-based firms as well as clusters.

Malta's Life Sciences Park will be providing world class facilities including laboratories, offices, lecture theatres, meeting rooms and a number of perfectly equipped shared facilities, giving local and international organisations space to research, explore and create. This prestigious 11 000 m<sup>2</sup> site set in a park-like environment, is strategically positioned nearby the island's main recently built hospital, a new Oncology Centre and the University of Malta. This fast evolving zone is designed to inspire and support the development of both emerging and existing technology oriented enterprises, inventors and entrepreneurs and assists in making business competitive in the global market.

### **Cultural part: Għar Dalam**

Għar Dalam's relevance as a prehistoric site was discovered in the latter half of the 19th Century with a series of excavations unearthing animal bones as well as human remains and artefacts. The Cave is a highly important site for its Palaeontology, archaeology and

ecology. The history of the cave and that of the Islands can be decoded from Ghar Dalam's stratigraphy. The lowermost layers, more than 500,000 years old, contained the fossil bones of dwarf elephants, hippopotami, micro-mammals and birds among other species. This layer is topped by a pebble layer, and on top of it there is the so-called 'deer' layer, dated to around 18,000 years ago. The top layer, or 'cultural layer', dates less than 10,000 years and holds evidence of the first humans on the Island. It was here that the earliest evidence of human settlement on Malta, some 7,400 years ago, was discovered. The site consists of a cave, a Victorian style exhibition and a didactic display as well as a garden planted with indigenous plants and trees.

## Option 4

### Scientific part: Sentech Malta Fp Ltd

Sentech Malta FP Ltd. (SMF) is a young company manufacturing Fibre Optic Gyroscopes (FOGs). Unlike the classic spinning-mass gyroscope, the FOGs have virtually no moving parts and no inertial resistance to movement. Hence, FOG technology is considered to be one of the most reliable gyroscope technologies.

The company was originally set-up in 2008 and it is based in the Malta with state of the art manufacturing facilities spanning 2300 m<sup>2</sup> at the Mosta TechoPark. Although SMF is a young company, it has very close collaboration with Fizoptika, an experienced world leader in the field of fibre optic gyroscope manufacturer. Fizoptika brings a world of experience having been in the Industry since 1989.



### Cultural part: Mdina - Natural History Museum

Mdina is a fortified city situated on a hill in the Northern Region of Malta. It served as the island's capital from antiquity until 1530, when the capital was moved to Birgu. Punic remains uncovered beyond the city's walls suggest the importance of the general region to Malta's Phoenician settlers. Mdina is commonly called the "Silent City" by natives and visitors. The town is still confined within its walls, and has a population of just under 300.





## Option 5

### Scientific part: Mater Dei Hospital

Mater Dei Hospital is the main hospital in Malta, offering a full range of hospital services as well as serving as a general teaching hospital in collaboration with the University of Malta. It also provides an extensive range of specialist services. The areas within Mater Dei Hospital (MDH) and now Sir Anthony Mamo Oncology Centre (SAMOC) where medical physics is mainly applied and practiced are the following: Nuclear medicine (diagnostic and therapeutic), Diagnostic radiography, Radiotherapy.

### Cultural part: Valletta - Palace Armoury

Valletta is the capital city of Malta, colloquially known as "Il-Belt" in Maltese. Geographically, it is located in the South Eastern Region, of the main island of Malta having its western coast with access to the Marsamxett Harbour and its eastern coast in the Grand Harbour. Valletta serves as the southernmost capital city in Europe.

Valletta contains buildings from the 16<sup>th</sup> century onwards, built during the rule of the Order of St. John, also known as Knights Hospitaller. The city is essentially Baroque in character, with elements of Mannerist, Neo-Classical and Modern architecture in selected areas, though World War II left major scars on the city, particularly the destruction of The Royal Opera House. The City of Valletta was officially recognised as a World Heritage Site by UNESCO in 1980.

## Option 6

### Scientific part: Diagnostic Science Laboratories

The Diagnostic Science Laboratories (DSL) primary aim is to develop and promote appropriate solutions to the conservation problems of objects, art, architecture, archaeological sites and monuments.

DSL staff members carry out research in a multidisciplinary team effort to ensure the protection of our collections through the application of recent scientific knowledge in accordance with international practices. Scientists provide essential information to conservators about

deterioration causes, principal factors influencing the damage mechanisms and compatible treatment options. They also conduct scientific research on the composition of materials, authentication and identification that can contribute to the scholarly interpretation of art and artefacts from the past.

DSL also operates a section dedicated to environmental monitoring and preventive conservation. This section was set up to address the preservation concerns of a vast amount of cultural heritage materials under the care of Heritage Malta and to reduce the real risks to our cultural treasures.

### **Cultural part: The Three Cities**

The Three Cities offer an intriguing insight into Malta and its history. Left largely unvisited, these cities are a slice of authentic life as well as a glimpse into Malta's maritime fortunes. The Three Cities can rightly claim to be the cradle of Maltese history, as Vittoriosa (Birgu), Senglea (Isla) and Cospicua (Bormla) have provided a home and fortress to almost every people who settled on the Islands. Their harbour inlets have been in use since Phoenician times: the docks always providing a living for local people, but also leaving them vulnerable when Malta's rulers were at war. As the first home to the Knights of St. John, the Three Cities' palaces, churches, forts and bastions are far older than Valletta's. The local communities here celebrate holy days and festas as nowhere else on the Islands.



### **Option 7**

#### **Mepa Żejtun Air Quality Centre**

The Malta Environment and Planning Authority (MEPA) is the national agency responsible for land use planning and environmental regulation in Malta. MEPA is also responsible for the implementation of around 200 Directives, Decisions and Regulations under the EU Environmental Acquis. MEPA is responsible for the monitoring of air pollution in ambient outdoor air and for coordinating policy measures. Air quality generally refers to the quantitative presence of potential harmful substances to life and to the environment in the air we breathe.

Most pollutants are the result of anthropogenic activity, with the principal sources being power generation, industry and transport. This is particularly true in urban areas. The Żejtun station is one of the 5 real time air quality stations. It is equipped with instruments measuring PM10, PM2.5, ozone, gaseous mercury and NOx.

#### **Cultural part: Tas Silġ ruins at Dellimara**

Tas-Silġ is a rounded hilltop overlooking Marsaxlokk Bay, Malta, close to the city of Żejtun. Tas-Silġ is a multi-period sanctuary site covering all eras from Neolithic to the fourth century AD, and due to this it indicates to archaeologists several different layers of excavation. The site takes its name from the nearby Church of Our Lady of the Snow (Maltese: Knisja tal-Madonna tas-Silġ).

### **Option 8**

#### **Scientific part: Methode Electronics Malta**

Methode Electronics is a leading developer of custom-engineered and application-specific products and solutions utilising the latest technologies. From biometric identification utilising the unique characteristics of human skin structure; to magnetic signature sensing of mechanical and electrical properties; to the revolutionary solid-state touch sensitive switches used in today's appliances and automobiles. Methode leverages the talents of 2,800 employees to serve a diversified group of customers in four market areas: User Interfaces, Sensor and Switches, Power and Data. Methode Malta's campus in Mriehel is a centre of technological excellence specialising in automotive, industrial radio-remote control and touch-sensor technology.

#### **Cultural part: National Museum of Fine Arts**

Valletta is the capital city of Malta, colloquially known as "Il-Belt" in Maltese. Geographically, it is located in the South Eastern Region, of the main island of Malta having its western coast with access to the Marsamxett Harbour and its eastern coast in the Grand Harbour. Valletta serves as the southernmost capital city in Europe.

Valletta contains buildings from the 16<sup>th</sup> century onwards, built during the rule of the Order of St. John, also known as Knights Hospitaller. The city is essentially Baroque in character, with elements of Mannerist, Neo-Classical and Modern architecture in selected areas, though World War II left major scars on the city, particularly the destruction of The Royal Opera House. The City of Valletta was officially recognised as a World Heritage Site by UNESCO in 1980.

### **Option 9**

#### **Scientific part: CISK brewery**

Born in 1929, Cisk Lager was originally launched by the Malta Export Brewery as Cisk Pilsner. The history of Cisk, however, started much earlier than that, when Malta's first privately-owned bank was established by Giuseppe Scicluna in 1840. The Malta Export Brewery merged with Simonds Farsons Limited in 1948 to become Simonds Farsons Cisk as it is known today. Cisk Lager is a beer of excellent quality, rich in tradition and heritage.



It is brewed to the highest standards using only the choicest raw materials. Its recipe has remained unchanged since its launch in 1929 as Cisk Pilsner. A key brand in the product portfolio of Simonds Farsons Cisk plc, a leading brewer and beverages producer on the Maltese Islands, Cisk Lager has developed and progressed considerably since its launch 80 years ago – 80 years that closely linked to the industrial and economic evolution of Malta.



### **Cultural part: San Anton Gardens**

The San Anton Gardens is located in Attard and is one of the most beautiful gardens in Malta with a large variety of beautiful flowers and plants. This garden has been open to the public since 1882 and it was built by Grand Master Antoine de Paule to complement his summer residence, San Anton Palace, which today is the residence of the Maltese President. The garden has several walkways that take you through the green gardens where you will discover fountains, ponds with families of ducks and several plants and flowers such as roses, Bougainvillea, Norfolk, Araucarias as well as other trees from all over the world some of them over three centuries old. The San Anton Gardens are surrounded by walls giving the park a rustic and private atmosphere.

## **Option 10**

### **Scientific part: Methode Electronics Malta**

Methode Electronics is a leading developer of custom-engineered and application-specific products and solutions utilising the latest technologies. From biometric identification utilising the unique characteristics of human skin structure; to magnetic signature sensing of mechanical and electrical properties; to the revolutionary solid-state touch sensitive switches used in today's appliances and automobiles. Methode leverages the talents of 2,800 employees to serve a diversified group of customers in four market areas: User Interfaces, Sensor and Switches, Power and Data. Methode Malta's campus in Mriehel is a centre of technological excellence specialising in automotive, industrial radio-remote control and touch-sensor technology.

### **Cultural part: Valletta - National Museum of Archaeology**

The Museum exhibits a spectacular range of artefacts dating back to Malta's Neolithic period (5000 BC) up to the Phoenician Period (400 BC). On display are the earliest tools used by the prehistoric people to facilitate their daily tasks and representations of animal and human figures; elements which not only show the great artistic skills of the first dwellers of the island but also gives us an insight of their daily lives. Highlights include the 'Sleeping Lady' from the Hal Saflieni Hypogeum, the 'Venus of Malta' from Haġar Qim, bronze daggers recovered from the Bronze Age layers at Tarxien Temples, and the Horus and Anubis pendant and the anthropomorphic sarcophagus, both belonging to the Phoenician Period. The Museum provides the visitor with a good introduction to the prehistory and early history of the Maltese Island and acts as a catalyst to the other archaeological sites in Malta. Works are currently in progress to include another hall dedicated to the Punic period and others dedicated to the Roman and Byzantine periods in Malta.

## **Option 11**

### **Talk on water: Oceanography and Kayaking**

Ocean currents around the Maltese Islands play a fundamental role in the local marine health and nutrient transport for ecological and economic reasons. Sea kayaking in Malta and Gozo is one of the best ways to explore the natural beauty of the Maltese Island's shoreline and observe such coastal dynamics very closely. Hence this 'Talk on Water', where Dr. Anthony Galea from the Physical Oceanography Research Group (within the Department of Geosciences, Faculty of Science of the University of Malta) will deliver a lecture on physical oceanography while kayaking along the hypnotising Munxar cliffs. He will explain how through the CALYPSO project, a number of fully operational HF radars were installed on the northern Malta and southern Sicilian shores capable of recording (in real-time with hourly updates) surface currents in the Malta Channel. Collected data, combined to numerical models, support applications to optimise intervention in case of oil spill response as well as endow tools for search and rescue, security, safer navigation, improved metro-marine forecasts, monitoring of sea conditions in critical areas such as proximity to ports, and better management of the marine space between Malta and Sicily. The group paddle will start from the mesmerising beach of St. Thomas Bay, kayak along the Munxar cliffs and dazzling Xrobb l-Għaġin from a unique perspective, till the notorious Il-Hofra l-Kbira at the Eastern Coastline of Malta. A remarkable excursion to remember.



## 3. Conference Venue

### 3.1 University of Malta

The University of Malta traces its origins to the founding of the Collegium Melitense in 1592. Situated at Tal-Qroqq, it is the highest teaching institution of Malta. There are nearly 11,600 students from Malta as well as foreign countries following a full-time or part-time degree or diploma course at our University. Lectures and presentations will be held in the lecture theatres while social events and parties will be held in the Quadrangle. Surrounded by trees and adjacent to the student house and canteen, the Quadrangle is a spacious area where people can relax in the shade of the trees and rest on several benches making it ideal for social events.



University Quad where most social events will be held

### 3.2 Accommodation

Accommodation will be held at the Malta University Residence at Lija. The Malta University Residence is conveniently located 3.4 km from the University Campus. It is situated on extensive private grounds with a large communal pool and within walking distance from the quaint town centre of Lija and main public transport routes. The Residence is well



positioned for accessing major shopping centres and historical sites. There is also access to eduroam.



University residence and local monument at Hal Lija

### 3.3 Food Supply

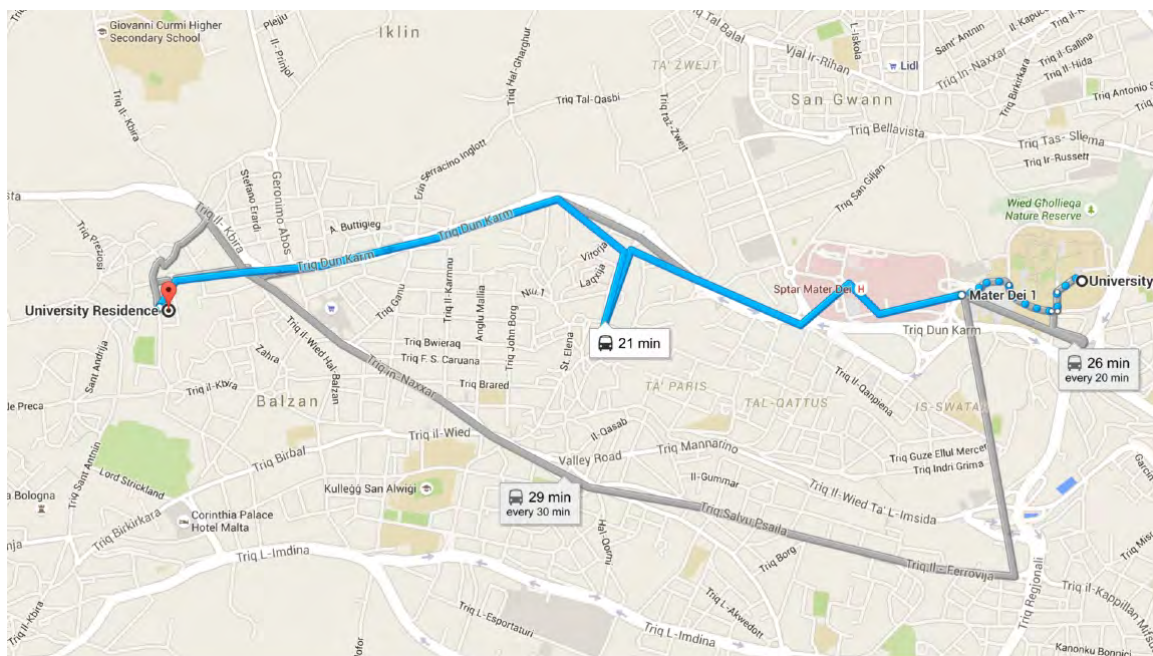
Breakfast and dinner will be served at the Univeristy Residence, while lunches will be distributed on campus and can be consumed on the quadrangle or in the student room.

### 3.4 Transportation

The approximate travel time from University to Campus is estimated to be around a 15 minute drive or a 45 minute walk.

Private air-conditioned transport will be provided between the university residence and the university campus:

- Coaches will depart from the university residence to the university campus every morning between 0800 and 0900.
- Coaches will depart from campus to the residence between 1800 and 1830 taking students back to the residence for dinner or as indicated in the programme.
- Coaches will depart from the residence to campus between 2030 and 2100 for the organised evening events or as indicated in the programme.
- Coaches will return students to the residence according to a staggered timetable with coaches departing at 23:00, 00:00 and at 01:00.
- Transport will also be provided to and from the excursions, beach trip and the AGM.
- A minibus shuttle service will also be provided that will allow students to travel between the residence and campus during the day. Minibuses will loop between the university campus every hour.



Route from the University Residence to the University Campus

## 4. Local Information

### 4.1 The Maltese Islands

The Maltese Islands are situated at the heart of the Mediterranean. At such an idealistic position, Malta enjoys a warm sunny climate, golden beaches and a rich cultural and historical background which dates back to about 5000 B.C. The islands' strategic position made Malta the subject of interest to many prominent civilisations back in past, ranging from the Phoenicians and Romans during the first centuries after Christ, to the French and British up to less than 60 years ago. Malta's rich history is visible in its wonderful old city Imdina, its capital city Valletta, as well as other rural areas and villages.

Malta has a church for every day of the year and a feast for every weekend of summer. The Maltese national language is Maltese - Malti. This language is the only Semitic language written in Latin script and the only Semitic-origin language officially recognised as a European Union tongue. It is descended from Siculo-Arabic (an Arabic dialect that developed in Sicily) but now contains a substantial amount of English, Italian and French words. Malta is a wonderful, colourful, energetic place to be in, and we - the organising committee of ICPS 2016 - will try our best to make your stay here memorable and pleasurable.



Ghajn Tuffieha Bay and Marsaxlokk Harbour



## 4.2 Useful Maltese Expressions

Good morning	Bongu
How are you?	Kif ahna? / X'ghandna?
Excuse me	Skuzi
Yes/No	Iva/Le
Thank you (very much)	Grazzi (hafna)
Hey friend!	Aw habib!
Good bye	Caw
Good evening	Bonswa
What's new?	X'hemm ġdid?
How much does this cost?	Kemm jiswa / tiswa dan / din?
Can you help me?	Tista tgħini?
Help!	Ajjut!
Would you like to dance with me?	Tixtieq tizfen mieghi?

## 4.3 Places of Interest

### Valletta

Valletta is Malta's capital city, named the Grand Master of the Order of St. John, Jean Parisot de la Valette. Doubling as fortress, its fortifications stand proud since their construction in the 15<sup>th</sup> century, built to withstand invasion. The city is very rich in different sites, ranging from the usual pleasant cafes to many historical sites such as St. John's cathedral.

### Mdina

The history of Mdina may be traced back for millennia and is characterised by its middle-eastern architecture alongside grand palaces home to Spanish and Sicilian nobility in the 12<sup>th</sup> Century. The peaceful air combined with the mixture of gorgeous scenery and charming buildings make it a very unique place in Malta.

### Sliema

Sporting various shops, restaurants and a very modern outlook to island. The coast along Sliema offers a charming view of the sea, especially that of Valletta, making it excellent for a relaxing evening walks or jog, as well as a swim. Of course, all the shops also make it an ideal spot for shopping for just about anything.

### Festa ta' Santa Maria (Mosta)

Every large city celebrates a feast or festa in honour of their patron saint. These celebrations have a very particular Maltese character to them, usually involving fireworks, marching bands and of course, lots of food.

Mosta's feast of Saint Mary is held on August 15<sup>th</sup> centred around the Mosta church, home to one of Europe's largest dome-structures. Being one of the larger celebrations of its kind, it has everything one can expect from these "festas" and is surely a memorable experience to those who have never attended any such local event.





## 5. Important Information

### 5.1 Organising Committee Contacts

Emergency contacts:

Emergency number: 112

Ambulance: 196

Fire brigade: 112

Police: +356 2122 4001-7

Norbert Bonnici: +356 79314159/+31638300418

Edward Zammit: +356 99372717

Daphne Pollacco: +356 99010449

Andrew Finch: +356 79802966

Gabriel Falzon: + 356 99961042

### 5.2 How to ride the bus

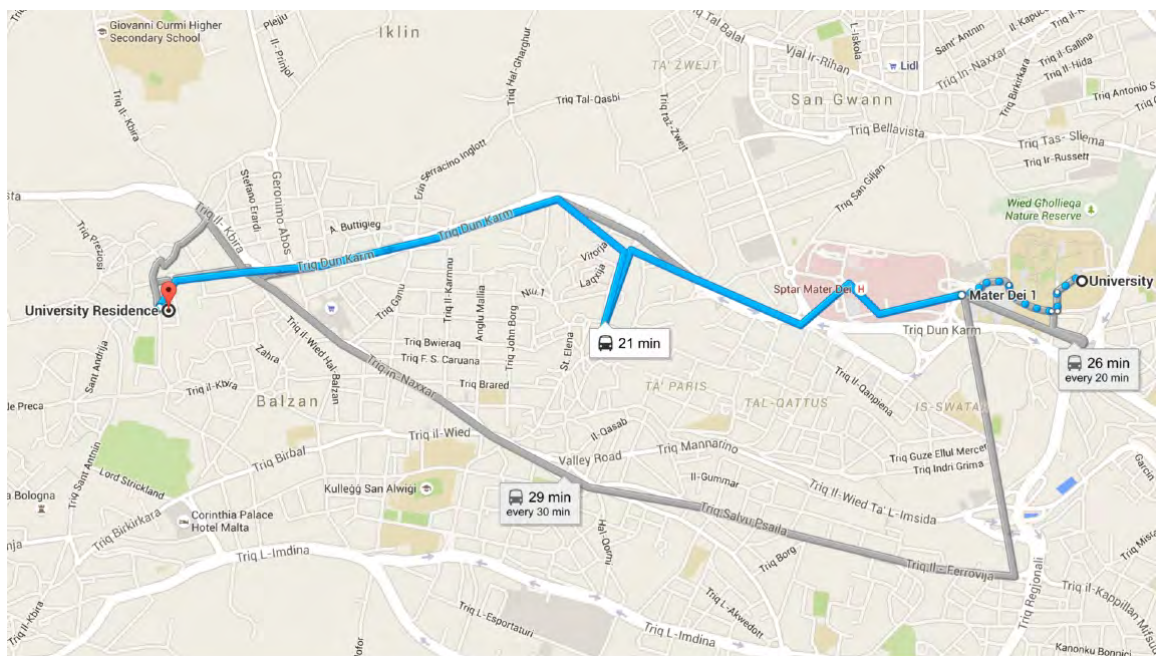
Guide to catching the bus:

There are very few locations inaccessible by the public transport system. Bus stops can be frequently observed alongside roads and contain information regarding the routes and time schedules. The main operation hours are between 7:00 and 23:00.

Tickets can be purchased for two euro (valid for two hours). Reduced rates are applied when using prepaid bus cards “tal-linja” cards.

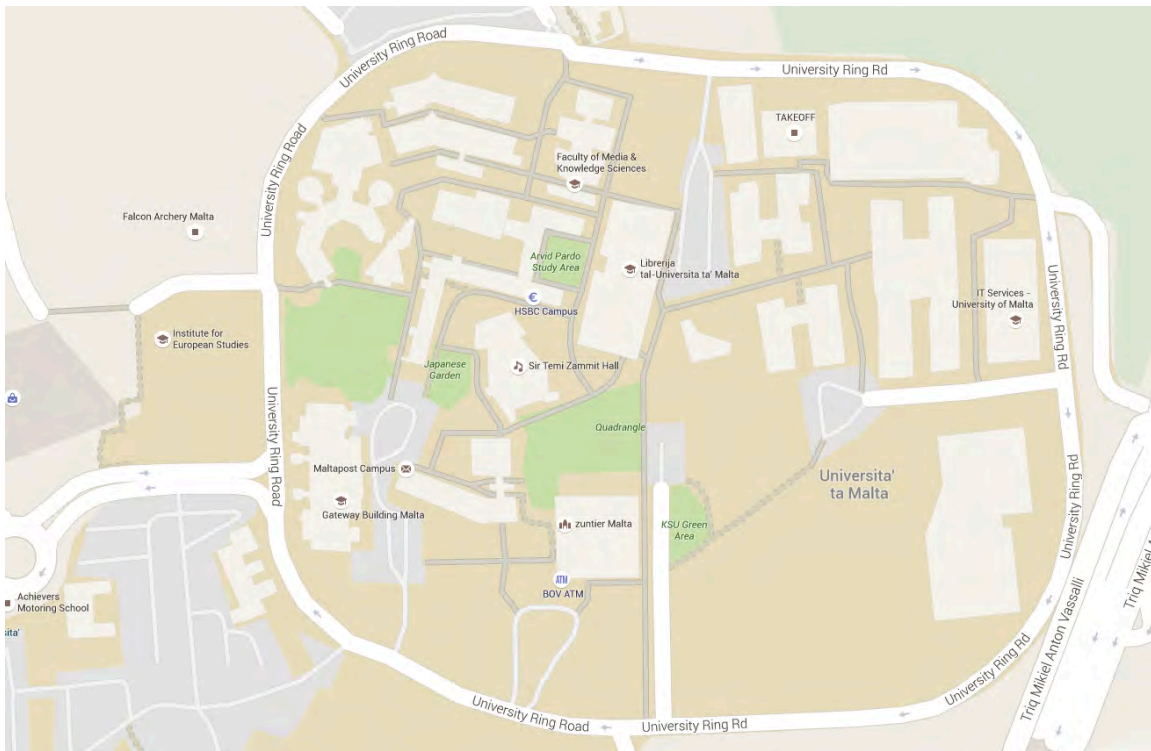


## 6. Maps of the Area



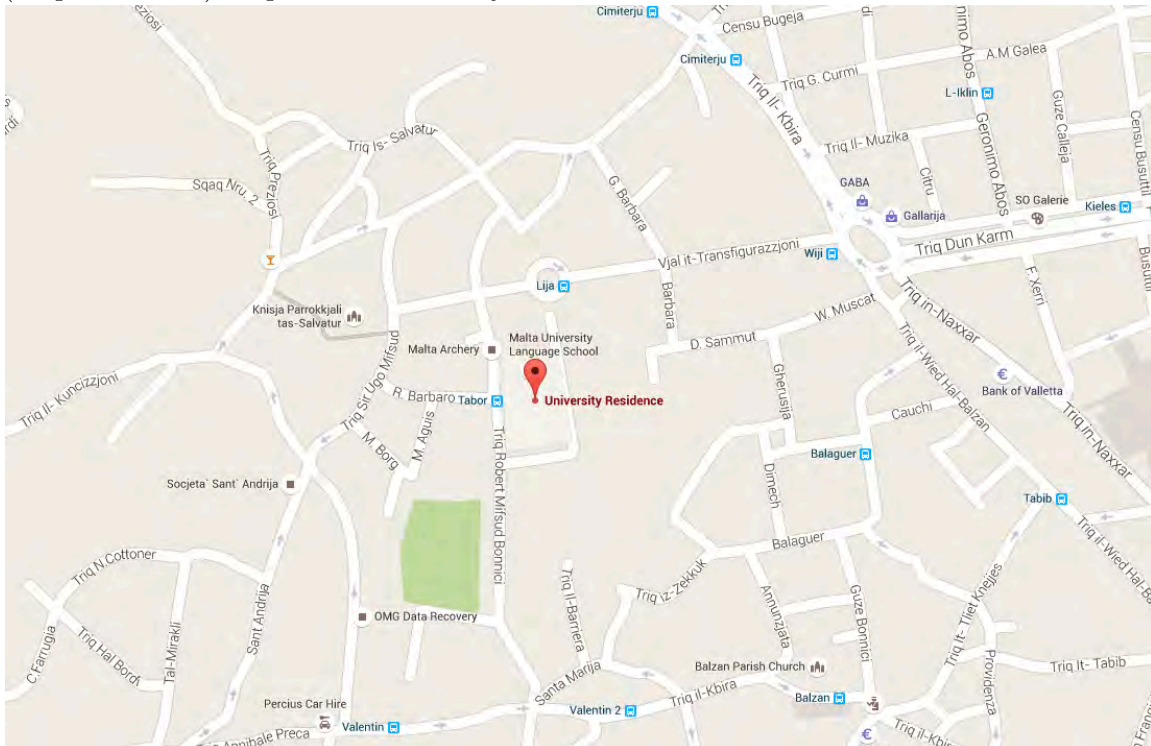
(Map. 1.) Main routes from the University to the residence.





(Map. 2: Above) Map of the University of Malta.

(Map. 3: Below) Map of the University of Malta residence.



## 7. Supporters

The organising committee of the 31<sup>st</sup> International Conference of Physics Students would like to thank the following companies and institutes for providing aid to the conference be it financially or in-kind.



AirMalta



Heritage Malta



Conventions Malta



International Association of  
Physics Students



European Physical Society



University of Malta





## 8. Organising Committee



Norbert Bonnicci  
President



Nicholai Cumbo  
Vice-President



Kevin Psaila  
Treasurer



Edward Zammit  
Secretary



Daphne Pollacco  
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Anita Farrugia  
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