Application Summary

- Please complete the Award Letter section on the Internal tab.
- Go to the Grant Agreements section on the left hand side to generate the Award Letter.

Application ID

2025-9436

Application Type

Higher Education Awards

Application

Information Session

The Oppenheimer Memorial Trust hosted online information sessions in August 2025. To access the recording, please use this link: https://www.youtube.com/watch?v=9au_r7Znx5I

Application Summary

Please note: We are only interested in your authentic response to the questions in this application form. Any use of artificial intelligence (AI) needs to be declared. Please specify any question where AI has been used. Failure to do so will result in the withdrawal of your application.

Use of Artificial Intelligence

We are only interested in your authentic response to the questions in this application form. Any use of artificial intelligence (AI) needs to be declared. Please specify any question where AI has been used. Failure to do so will result in the withdrawal of your application.

What do you need funding for?

The Oppenheimer Memorial Trust (OMT) awards a limited number of scholarships annually for postgraduate study at public Higher Education Institutions in South Africa or overseas at Master's, Doctoral and Postdoctoral level.

Masters

Institution

Do you intend to study at a local (South African) institution or an international institution?

Local

Please indicate the faculty related to your application

Natural Sciences

Choices of Study

- This section requires information regarding the application's intended study and budget.
- Please click on the plus "+" button below to start adding information.
- If you are applying at more than one institution or have more than one study choice you should provide the required information for each option of study or institution, starting with your first choice. You can do this by using the “+” button.
- You are allowed a maximum of three choices. Please clearly indicate which is your first, second and third choice (where applicable)
- If you need to remove a study choice, please open the entry and click on the "Delete" button.

#	Choice of Study	Last Modified	Status
1	M.Sc in Mathematical and Theoretical Physics	28/08/2025 07:12PM	Completed
2	M.Sc in Physics (dissertation)	28/08/2025 07:12PM	Completed
3	M.Sc in Physics or Medical Physics (dissetaion)	28/08/2025 07:12PM	Completed

Motivation

Motivation

Please describe in no more than 500 words:

1) Background, schooling, general interests and personal philosophy
2) Values, priorities and passions
3) Short to medium term plans and priorities
4) Career aspirations

Hero, a word that brings hope and light. When one thinks of a hero most think of an individual with superpowers saving lives, yet we have all heard the saying that not all heroes wear capes. Raised in a small town, I had always admired and hoped to be a hero for their noble and selfless qualities, courage and ability to save the day. I was taught that the Lord has given us all our own blessings, but what matters is how can we use those blessings to be a blessing to those around us. With my many interests

in all disciplines I had been exposed to I believe science is my gateway to touch as many people as possible around me. I firmly believe that good science is one of the largest forms of charity as one's efforts and energy towards research, development and innovation can improve the quality of life for all. Like a doctor to a patient, a scientist can help a nation. Thus, I have made it my lives purpose to be a South African beacon of hope in the field of physics, leaving my footprint in history.

The path to brings out the nation rich promise aligning with my dreams continues in taking my Master program in Physics with the purpose of having a nuclear physics based dissertation. Nuclear physics has applications in various disciplines which I wish to investigate. My background in various courses such as astrophysics, fluid dynamics and the different fields in physics highlights my many interests but also my ability to manage and perform in all of them simultaneously. With an M.Sc in Physics I hope to pour out all my knowledge and abilities into one project, listed in the “Choice of study” section. With my international opportunity at JINR, Dubna I was exposed to facilities unavailable in South Africa and senior researchers (possible supervisors and collaborators) that were able to enhance my learning. Upon this realization I observed that there are many facilities abroad which would allow me to tackle more challenging topics with South African interest such as nuclear fusion and fission or combination of radiation and targeted therapy. My contribution in medical physics AAPM 2025 conference (listed in the CV) gives me hope in further contributions to the world of physics.

Success in such topics not only depends on the environment but the student's ability to utilize the opportunity. I believe that I have developed a strong sense of discipline, hard work ethic and patience as they are key ingredients to success. To gain something of great value you need to sacrifice/put in something of equal or usually higher value which is something that I practice in the form of consistent hard work. Although, path I have set out for myself is a burden, my mindset would not let me drop it as the fruits of my labor would be worth it for my nation and the world as a future for research.

Use of Artificial Intelligence

> Please declare any use of artificial intelligence to answer this question. Please include the tool and prompt used.

Personal Information

Name

Molokotima Kekana

Email

ultimategohan.mok@gmail.com

Address Line 1

66 Lebombo Street

Address Line 2

Aerorand

City

Middelburg

Province

Mpumalanga

Postal Code

1050

Country

South Africa

Dialing Code

+27

Phone

0729223561

Date of Birth

15/04/2003

Citizenship

South African citizen

ID Number

0304155049089

Ethnicity

Black

Gender

Male

Highest qualification held

Bachelors of Science

What are you currently doing?

Studying

Please indicate the institution / company in relation to the previous question

University of Cape Town

Please upload the following documents:

1. An up to date CV (not more than 3 pages)
2. A copy of your South African ID / permanent residence permit / passport
3. A recent professional photograph

Phtograph.JPG
1.1 MB - 12/08/2025 11:18 PM

Plain_CV_Full.pdf
148.5 KB - 12/08/2025 11:18 PM

old_certified_id.pdf
458.6 KB - 12/08/2025 11:18 PM

Total Files: 3

Academic History

Please click on "Add Academic History" to populate the table

Institution	Level of degree	Qualification	Year completed	Comment
University of Cape Town	Undergraduate	Bachelors of Science	2024	Majored in Astrophysics, Applied mathematics and Physics

Academic Transcripts

Please upload all available academic transcripts supporting your academic history in the table above. If transcripts are outstanding, please upload these as they become available.

For programmes in progress: Please upload interim results, or a signed progress report indicating your anticipated result which will be adjudicated in place of your transcripts. If your application is successful, your final mark / transcripts will be compared to your progress report and any major discrepancies will be assessed by the Trust.

Certified copies of your degree(s)

If degree certificates are outstanding, please upload these as they become available.

Molokotima_Oti_Kekana.pdf
232.9 KB - 12/08/2025 11:21 PM

Total Files: 1

Academic awards

Please list below any academic awards you have won over your academic career. This could include: Dean's list, class medals, Golden Key, subject awards, etc

Dean's List (2024)
Dean's List (2023)

References

Please nominate 3 references and provide their email addresses

Referees must be familiar with your current work and study plans and be well-placed to attest to your academic achievements.

Your nominated referees will receive an email notification and link that will allow them to upload the reference letter directly onto the system, and you will receive an email once each referee has submitted their letter.

Please note, your application cannot be considered for adjudication until all your reference letters have been submitted. Please follow up with your referees directly before the submission closing date.

Please click on the icon below to invite your referees.

Prefix	Name	Surname	Email Address	Role	Status
Professor	Dmitry	Kamanin	kamanin@jinr.ru	Referee	Invited
Professor	Igor	Barashenkov	igor.barashenkov@gmail.com	Referee	Invited
Associate Professor	Steven	Peterson	steve.peterson@uct.ac.za	Referee	Invited

Reference forms status

Dmitry Kamanin - Completed
Igor Barashenkov - Completed
Steve Peterson - Completed

Application Summary

Choice of Study

M.Sc in Physics or Medical Physics (dissetaion)

Please indicate the topic related to your study

Nuclear physics

Please indicate the institution you have applied to

McGill University

Please indicate the start date of your programme

> Please note that the Trust does not accept any late applications and applications will be considered according to the relevant start date. Please reference OMT website (https://www.omt.org.za/postgraduate-study) to ensure you are applying in the correct call. Late applications will not be considered by the Trust.

24/08/2026

Please indicate the duration of your programme

2 years

Intended Study

> Please give an outline of the intended degree, programme of study, choice of institution, period of study detailing:

Description of programme

> Please describe the proposed course work, fieldwork, dissertation topic (as applicable). Please articulate the problem statement, key objectives

Physics:
A requirement of 5 course is desired in the program. Where I am thinking of taking the general High Energy Experimental sequence.

My thesis is to investigation of different magnetic confinement of plasma designs to try to achieve stable nuclear fusion. Nuclear fusion is spoken to be the future of energy generation as it has low nuclear waste and carbon footprint but also its long lasting, limitless nature. With inspiration from nature nuclear fusion reactors (stellar cores) a magnetic confinement design mimicking gravitational forces suggests hydrodynamical equilibrium can be achieved with deuterium and tritium plasma. Thus, stable nuclear fusion can be achieved with our current technologies and knowledge. A feasible computational and experimental approach would allow me to explore this idea as well as optimizing fusion parameters.

Medical:
In my first year I am expected to take 11 courses.
Radiation Physics
Radiotherapy Physics
Radiotherapy Laboratory
Medical Imaging
Laboratory in Diagnostic Radiology & Nuclear Medicine
Radiation Biology
Instrumentation & Computation in Medical Physics
Health Physics
Physics of Diagnostic Radiology
Physics of Nuclear Medicine
Anatomy & Physiology for Medical Physics

My thesis research will be on utilizing calculated combined bone cancer treatment using proton beam therapy as well as targeted radioisotopes treatment. Due to the high precision and thorough treatment of both types of treatment the combination of the two techniques will allow a more complete annihilation of the cancerous cells with the correct dosage. Additionally, both treatment methods are ideal for sensitive and difficult regions for surgical and other radiation treatment such as the spine.

Significance and relevance of intended study

> Please describe the relevance and anticipated significance of your chosen topic:
> - To South Africa and/or Africa
> - How the work will extend current knowledge on the topic
> - Its perceived benefits to you personally

Physics:
The knowledge and skills to create a stable nuclear reactor presents the opportunity to provide clean, sustainable and energy efficient power to South Africa and hopefully neighbouring countries. This would eliminate power generation from the list of current and future concerns for Africa. Additionally, once the project is proven to be successful it may encourage international interactions with other African countries to provide the desired raw materials. Again, with the success of the project many African collaborations would spark for engineering and industrial work and in hope develop students with the necessary skills and new facilities within Africa, removing our constant reliance on other continents. My personal contribution to the world allows me to make the next few steps towards energy and power being a basic resource accessible in every household despite what type of country you may live in (1st, 2nd and 3rd world countries).
The work will accelerate the achievement of stable, safe and more efficient nuclear fusion reactors. With the introduction of a design for nuclear fusion reactors perhaps heavier elements can be fused, releasing more energy (increasing the energy output). Furthermore, the applications the magnetic field arrangement can introduce a new form of magnetic shielding for astronautic mission use.
For me this topic not only brings a new age of nuclear fusion but also the new era of research and development for any system involving magnetic fields operations. And hopefully, highlights a new gap in the current state of our technologies to perform more complex magnetic confinement designs easier.

Medical:
South Africa has been observed to have an increasing population diagnosed and suffering with cancer. Moreover, cancer has become one of the leading causes of death. With the advancement of dual treatment methods, proton therapy and targeted radioisotopes the number of lives claimed by cancer will be able to greatly reduce. The combination of treatment not only presents a thorough and precise treatment of cancers in within and near vital organs but also presents a more feasible yet reliable system. Proton therapy by itself is an expensive treatment from the construction of the facility as well as the procedure of the treatment. However, with the combination of therapeutic radioisotope the cost of the treatment will be reduced and more affordable to locals. Additionally, the success of this topic presents the possibility of a proton therapy to be made available in South Africa where treatment of patients can occur as well as the production of diagnostic and therapeutic isotopes via the available proton beam for usage and distribution. Thus, the thesis with improve the quality of life for cancer patients within Africa and South Africa, new jobs within the facilities and economy. Lastly, the facility

would be one of the few active protons therapy centers within the southern hemisphere and Africa.

The thesis will present a new combination of complentary non-surgical cancer treatment, which effects can be observed within the cellular level. The investigated dual treatment can help advance the understanding of sequenced approaches, cellular response and their combined effects.

Compelling reasons for undertaking the programme of study abroad including commentary on the unique or highly specialised character of the programme, institution or faculty

The practical knowledge, research training and laboratory skills made available in the program are not available in any national initiation which are vital for both the nuclear physics and medical physics dissertation. Additionally, supervisors and collaborators with years of experience will allow me to conduct the thesis and investigate creating and mentoring my progress on a Proton therapy and radioisotope production initiative for a facility.

Have you been formally accepted into the programme

No

> Please note, where more than one institution has been applied to, please clearly state this on your document and identify which institution is your preferred first choice. Applicants are required to submit one application in this case.
>
> **Studies in Progress:** The OMT may consider applications from students who are part way through their studies (e.g. if you are studying a 2 year Master's programme and have completed your first year, you may apply for funding for your second year of studies) in line with the application dates above. If your academic year has already commenced, your application will not be considered.
>
> **Eligibility and Tenure:** Students who intend to undertake a second degree at the same level as one they already hold are not eligible for funding.
>
> The OMT does not fund **MBAs, DBAs** or other programmes that have a narrow and commercial focus. The definition of this is decided on at the discretion of the Trustees. Applicants are encouraged to confirm the validity of their application with the Trust before submitting a formal application.

Budget

Applicants must disclose their personal financial position and submit a budget indicating:

1) Annual estimates of costs for the duration of the period of study including tuition fees, living costs, travel, books and subsistence costs (as applicable)
2) Income from all sources including: Savings, family contributions, loans, secured scholarships / bursaries / other awards, estimates of income from part-time work or assistantships

How many years do you require funding for?

If you require funding for part of a year, please round this up to 1 year. Please click on **Save Draft** after your selection to see the number of years reflected on the budget table.

2

Currency

Please indicate the currency for your budget and click on **Save Draft** after your selection to see the conversion applied on the budget table.

If you need to change your currency, please re-select it, then click on **Save Draft** after your selection. Please open the budget table to view the changes, click **Save** again and close the budget table. Your changes will have been applied.

CAD

Budget

Please click on "Open Budget" to populate the budget table.

Please complete the budget in the currency relevant to the country where the institution is based.

Where more than one University has been applied to, please provide separate budgets, indicating the preferred first choice (as stipulated in intended study).

Candidates are encouraged to be realistic with their costs as budget amendments are not permitted after an award has been granted.

> Candidates are encouraged to actively seek out co-funding from other sources including their host institutions and must declare all applications made to other funders to the OMT.
>
> Scholarships are limited to one degree or programme of study for the following periods: a maximum of two years for Master's study, a maximum of three years for PhD and two years at Postdoctoral level. Exceptions may be made for Master's scholarship holders upgrading to PhD level.

Costs

Please be sure to include the following costs as separate rows in your table: Tuition (where applicable), travel expenses, living expenses. Any other costs may be included in separate rows.

Expenses	Year 1	Year 2	Total	Year 1 (ZAR)	Year 2 (ZAR)	Total (ZAR)
Travel	4,312.00	4,312.00	8,624.00	62,506.75	62,506.75	125,013.50
Accomodation	1,500.00	1,600.00	3,100.00	21,744.00	23,193.60	44,937.60
Food	4,800.00	5,000.00	9,800.00	69,580.80	72,480.00	142,060.80
Tuition	12,720.18	12,720.18	25,440.36	184,391.73	184,391.73	368,783.46
	23,332.18	**23,632.18**	**46,964.36**	**338,223.28**	**342,572.08**	**680,795.36**

Secured Funding

Secured funding relates to scholarship applications, savings, loans, etc that the applicant has already been awarded

Sources	Year 1	Year 2	Total	Year 1 (ZAR)	Year 2 (ZAR)	Total (ZAR)

Unsecured Funding

Unsecured funding relates to other scholarship applications (besides OMT) where the candidate has applied to, but this has not yet been awarded

Sources	Year 1	Year 2	Total	Year 1 (ZAR)	Year 2 (ZAR)	Total (ZAR)
McCall MacBain Scholarship	27,600.00	27,600.00	55,200.00	400,089.60	400,089.60	800,179.20
	27,600.00	**27,600.00**	**55,200.00**	**400,089.60**	**400,089.60**	**800,179.20**

Total

	Year 1	Year 2	Total	Year 1 (ZAR)	Year 2 (ZAR)	Total (ZAR)

	23,332.18	23,632.18	46,964.36	338,223.28	342,572.08	680,795.36

Please upload any supporting documentation here

Application Summary

Choice of Study

M.Sc in Physics (dissertation)

Please indicate the topic related to your study

Nuclear physics

Please indicate the institution you have applied to

University of Cape Town

Please indicate the start date of your programme

> Please note that the Trust does not accept any late applications and applications will be considered according to the relevant start date. Please reference OMT website (https://www.omt.org.za/postgraduate-study) to ensure you are applying in the correct call. Late applications will not be considered by the Trust.

02/02/2026

Please indicate the duration of your programme

2 years

Intended Study

> Please give an outline of the intended degree, programme of study, choice of institution, period of study detailing:

Description of programme

> Please describe the proposed course work, fieldwork, dissertation topic (as applicable). Please articulate the problem statement, key objectives

In 1962, at the Flerov Laboratory of Nuclear Reactions (FLNR), JINR, spontaneously fission shape isomers (metastable states of the mother nuclei before decay) in actinoids (Elements with an atomic numbers range 89–103) were discovered. The physics of the phenomenon is because the fission barrier has a complex double peaked structure. The isomeric level is localized in the second potential well of the barrier and, with some probability, from this state the nucleus can spontaneously fission. The existence of local minima on the surface of the potential energy of a nucleus has been shown in many theoretical works for a wide range of nuclei. At the same time, so far there are no calculations that predict the isomeric state near the top of the fission barrier for the nuclei lighter than actinoids. In the series of recent experiments using different time-of-flight spectrometers of heavy ions the FOBOS group from FLNR for the first time observed the specific binary partitions of fission fragments (FFs) from the shape-isomer states. The most convincing results were obtained using VEGA (Velocity Energy Guide based Array) setup installed at the MT-25 microtron in FLNR. The current understanding is that FF in the shape-isomer state is predetermined in the mother system at the stage of the binary fission. While the inelastic scattering in the solid-state foil plays a role for the detector measurements. Both facts were unknown in the past and there are still a lot of questions concerning the parameters controlling the effect; to be estimated in the experiment to propose a comprehensive physical model of the phenomenon under study. Such experiments are planned to be performed at the upgraded version of the VEGA setup (VEGA-m). A proposed master thesis project could include the participation a full participation in the VEGA-m setup.

Significance and relevance of intended study

> Please describe the relevance and anticipated significance of your chosen topic:
> - To South Africa and/or Africa
> - How the work will extend current knowledge on the topic
> - Its perceived benefits to you personally

Taking part in the VEGA project provides an excellent opportunity to prepare the me for the forthcoming work, possibly in iThemba LABS. Furthermore, the connection of my MSc study with one of the SA-JINR collaboration projects allows me to preform investigations applicable to world level of novelty of nuclear physics research in South Africa. As secondary applications would benefit fission facilities like power plants and. Lastly, this study could be immediately continued as PhD project.

The project provides me with an unique opportunity to take part himself as a member of the compact scientific group in all stages of the scientific project from installation of the experimental setup up to the physical treating of the results during just a few years. Moreover, equipping me with unique skills such as fast electronics and data acquisition systems, which are essential yet scares skills in developing South Africans research and development.

Besides the strengthening of international relations with BRICS countries, the project may assist South Africa and Africa in a more effective and safe approach to measuring, transporting and nuclear waste developed by nuclear fission power plants. As the construction of nuclear fission power plants seem to be an initiative in South Africa and other African countries. Nuclear power plants do not contribute to the carbon-foot print however they do contribute to nuclear waste which can be prevented from being a future concern with local expertise that I would be able to provide after this project.

Compelling reasons for undertaking the programme of study abroad including commentary on the unique or highly specialised character of the programme, institution or faculty

The program will be main run in South Africa however using the JINR-SA collaboration I will have access to the mentioned JINR facilities for 3 month periods. This would not be a completely abroad study but a combination of local and international collaboration. Additionally, my 2025 JINR International Student Practice supervisor had encouraged such a collaboration and welcomes my frequent visits after the international opportunity in June/July 2025.

Have you been formally accepted into the programme

No

Please note, where more than one institution has been applied to, please clearly state this on your document and identify which institution is your preferred first choice. Applicants are required to submit one application in this case.

Studies in Progress: The OMT may consider applications from students who are part way through their studies (e.g. if you are studying a 2 year Master's programme and have completed your first year, you may apply for funding for your second year of studies) in line with the application dates above. If your academic year has already commenced, your application will not be considered.

Eligibility and Tenure: Students who intend to undertake a second degree at the same level as one they already hold are not eligible for funding.

The OMT does not fund **MBAs, DBAs** or other programmes that have a narrow and commercial focus. The definition of this is decided on at the discretion of the Trustees. Applicants are encouraged to confirm the validity of their application with the Trust before submitting a formal application.

Budget

Applicants must disclose their personal financial position and submit a budget indicating:

1) Annual estimates of costs for the duration of the period of study including tuition fees, living costs, travel, books and subsistence costs (as applicable)
2) Income from all sources including: Savings, family contributions, loans, secured scholarships / bursaries / other awards, estimates of income from part-time work or assistantships

How many years do you require funding for?

If you require funding for part of a year, please round this up to 1 year. Please click on **Save Draft** after your selection to see the number of years reflected on the budget table.

2

Application Summary

Currency

Please indicate the currency for your budget and click on **Save Draft** after your selection to see the conversion applied on the budget table.

If you need to change your currency, please re-select it, then click on **Save Draft** after your selection. Please open the budget table to view the changes, click **Save** again and close the budget table. Your changes will have been applied.

ZAR

Budget

Please click on "Open Budget" to populate the budget table.

Please complete the budget in the currency relevant to the country where the institution is based.

Where more than one University has been applied to, please provide separate budgets, indicating the preferred first choice (as stipulated in intended study).

Candidates are encouraged to be realistic with their costs as budget amendments are not permitted after an award has been granted.

Candidates are encouraged to actively seek out co-funding from other sources including their host institutions and must declare all applications made to other funders to the OMT.

Scholarships are limited to one degree or programme of study for the following periods: a maximum of two years for Master's study, a maximum of three years for PhD and two years at Postdoctoral level. Exceptions may be made for Master's scholarship holders upgrading to PhD level.

Costs

Please be sure to include the following costs as separate rows in your table: Tuition (where applicable), travel expenses, living expenses. Any other costs may be included in separate rows.

Expenses	Year 1	Year 2	Total
Travel	6,000.00	7,000.00	13,000.00
Accomodation	80,000.00	85,000.00	165,000.00
Food	30,000.00	36,000.00	66,000.00
Tuition	37,780.00	37,780.00	75,560.00

	153,780.00	**165,780.00**	**319,560.00**

Secured Funding
Secured funding relates to scholarship applications, savings, loans, etc that the applicant has already been awarded

Sources	Year 1	Year 2	Total

Unsecured Funding
Unsecured funding relates to other scholarship applications (besides OMT) where the candidate has applied to, but this has not yet been awarded

Sources	Year 1	Year 2	Total
UCT Faculty Fellowship	115,000.00	115,000.00	230,000.00
NRF Master General	126,836.00	126,836.00	253,672.00
	241,836.00	**241,836.00**	**483,672.00**

Total

	Year 1	Year 2	Total
	153,780.00	165,780.00	319,560.00

Please upload any supporting documentation here

Application Summary

Choice of Study

M.Sc in Mathematical and Theoretical Physics

Please indicate the topic related to your study

Nuclear Physics

Please indicate the institution you have applied to

University of Oxford

Please indicate the start date of your programme

> Please note that the Trust does not accept any late applications and applications will be considered according to the relevant start date. Please reference OMT website (https://www.omt.org.za/postgraduate-study) to ensure you are applying in the correct call. Late applications will not be considered by the Trust.

05/10/2026

Please indicate the duration of your programme

9 months

Intended Study

> Please give an outline of the intended degree, programme of study, choice of institution, period of study detailing:

Description of programme

> Please describe the proposed course work, fieldwork, dissertation topic (as applicable). Please articulate the problem statement, key objectives

The course concentrates on the main areas of modern mathematical and theoretical physics:
Elementary-particle theory, including string theory
Condensed matter theory (both quantum and soft matter)
Theoretical astrophysics
Plasma physics and the physics of continuous media (including fluid dynamics and related areas usually associated with courses in applied mathematics in the UK system)
Mathematical structures underlying physical theory.

Dissertation is optional however; I wish to participate in the investigation of different magnetic confinement of plasma designs to try to achieve stable nuclear fusion. Nuclear fusion is spoken to be the future of energy generation as it has low nuclear waste and carbon footprint but also its long lasting, limitless nature. With inspiration from nature nuclear fusion reactors (stellar cores) a magnetic confinement design mimicking gravitational forces suggests hydrodynamical equilibrium can be achieved with deuterium and tritium plasma. Thus, stable nuclear fusion can be achieved with our current technologies and knowledge. A feasible computational and experimental approach would allow me to explore this idea as well as optimizing fusion parameters.

Significance and relevance of intended study

> Please describe the relevance and anticipated significance of your chosen topic:
> - To South Africa and/or Africa
> - How the work will extend current knowledge on the topic
> - Its perceived benefits to you personally

The knowledge and skills to create a stable nuclear reactor presents the opportunity to provide clean, sustainable and energy efficient power to South Africa and hopefully neighbouring countries. This would eliminate power generation from the list of current and future concerns for Africa. Additionally, once the project is proven to be successful it may encourage international interactions with other African countries to provide the desired raw materials. Again, with the success of the project many African collaborations would spark for engineering and industrial work and in hope develop students with the necessary skills and new facilities within Africa, removing our constant reliance on other continents. My personal contribution to the world allows me to make the next few steps towards energy and power being a basic resource accessible in every household despite what type of country you may live in (1st, 2nd and 3rd world countries).

The work will accelerate the achievement of stable, safe and more efficient nuclear fusion reactors. With the introduction of a design for nuclear fusion reactors perhaps heavier elements can be fused, releasing more energy (increasing the energy output). Furthermore, the applications the magnetic field arrangement can introduce a new form of magnetic shielding for astronautic mission use.

For me this topic not only brings a new age of nuclear fusion but also the new era of research and development for any system involving magnetic fields operations. And hopefully, highlights a new gap in the current state of our technologies to perform more complex magnetic confinement designs easier.

Compelling reasons for undertaking the programme of study abroad including commentary on the unique or highly specialised character of the programme, institution or faculty

The program offers an in-depth course on plasma physics, beam mechanics and theoretical astrophysics combined but also a highly computational application. The combination of the courses would further advance my ability and knowledge to take up my nuclear fusion dissertation. Additionally, the opportunity to work with well experienced supervisors such as Professor Hooker with senior research experience in plasma, nuclear accelerators and astrophysical would allow me to explore the topic in a further capacity. Moreover, Oxford's access to instrumentation and accelerator innovations of plasma in such as the John Adams Institute provides me with advanced opportunities for computation and analysis.

Have you been formally accepted into the programme

No

Please note, where more than one institution has been applied to, please clearly state this on your document and identify which institution is your preferred first choice. Applicants are required to submit one application in this case.

Studies in Progress: The OMT may consider applications from students who are part way through their studies (e.g. if you are studying a 2 year Master's programme and have completed your first year, you may apply for funding for your second year of studies) in line with the application dates above. If your academic year has already commenced, your application will not be considered.

Eligibility and Tenure: Students who intend to undertake a second degree at the same level as one they already hold are not eligible for funding.

The OMT does not fund **MBAs, DBAs** or other programmes that have a narrow and commercial focus. The definition of this is decided on at the discretion of the Trustees. Applicants are encouraged to confirm the validity of their application with the Trust before submitting a formal application.

Budget

> Applicants must disclose their personal financial position and submit a budget indicating:
>
> 1) Annual estimates of costs for the duration of the period of study including tuition fees, living costs, travel, books and subsistence costs (as applicable)
> 2) Income from all sources including: Savings, family contributions, loans, secured scholarships / bursaries / other awards, estimates of income from part-time work or assistantships

How many years do you require funding for?

> If you require funding for part of a year, please round this up to 1 year. Please click on **Save Draft** after your selection to see the number of years reflected on the budget table.

1

Currency

> Please indicate the currency for your budget and click on **Save Draft** after your selection to see the conversion applied on the budget table.
>
> If you need to change your currency, please re-select it, then click on **Save Draft** after your selection. Please open the budget table to view the changes, click **Save** again and close the budget table. Your changes will have been applied.

GBP

Budget

> Please click on "Open Budget" to populate the budget table.
>
> Please complete the budget in the currency relevant to the country where the institution is based.
>
> Where more than one University has been applied to, please provide separate budgets, indicating the preferred first choice (as stipulated in intended study).
>
> Candidates are encouraged to be realistic with their costs as budget amendments are not permitted after an award has been granted.
>
> Candidates are encouraged to actively seek out co-funding from other sources including their host institutions and must declare all applications made to other funders to the OMT.

Application Summary

> Scholarships are limited to one degree or programme of study for the following periods: a maximum of two years for Master's study, a maximum of three years for PhD and two years at Postdoctoral level. Exceptions may be made for Master's scholarship holders upgrading to PhD level.

Costs

Please be sure to include the following costs as separate rows in your table: Tuition (where applicable), travel expenses, living expenses. Any other costs may be included in separate rows.

Expenses	Year 1	Total	Year 1 (ZAR)	Total (ZAR)
Tuition	41,250.00	41,250.00	1,007,118.75	1,007,118.75
Travel	1,000.00	1,000.00	24,415.00	24,415.00
Accomodation	7,500.00	7,500.00	183,112.50	183,112.50
Food	3,500.00	3,500.00	85,452.50	85,452.50
Study costs	500.00	500.00	12,207.50	12,207.50
	53,750.00	**53,750.00**	**1,312,306.25**	**1,312,306.25**

Secured Funding

Secured funding relates to scholarship applications, savings, loans, etc that the applicant has already been awarded

Sources	Year 1	Total	Year 1 (ZAR)	Total (ZAR)

Unsecured Funding

Unsecured funding relates to other scholarship applications (besides OMT) where the candidate has applied to, but this has not yet been awarded

Sources	Year 1	Total	Year 1 (ZAR)	Total (ZAR)
Rhodes Scholarship	19,800.00	19,800.00	483,417.00	483,417.00
	19,800.00	**19,800.00**	**483,417.00**	**483,417.00**

Total

	Year 1	Total	Year 1 (ZAR)	Total (ZAR)
	53,750.00	53,750.00	1,312,306.25	1,312,306.25

Please upload any supporting documentation here