



New Zealand Young Physicists' Tournament NZYPT - 2016



Entries are now open for the 2016 New Zealand Young Physicists' Tournament.

Saturday 5 th March 2016	Regional tournaments (Auckland/Wellington/Christchurch)
Saturday 19 th March 2016	National final (Auckland)
Sat/Sun 2 nd / 3 rd April 2016	NZ squad selection (venue to be announced)

The 7 Problems for NZYPT 2016

1. Lagging Pendulum

A pendulum consists of a strong thread and a bob. When the pivot of the pendulum starts moving along a horizontal circumference, the bob starts tracing a circle which can have a smaller radius, under certain conditions. Investigate the motion and stable trajectories of the bob.

2. Super Ball

Throw a highly elastic ball into the space between two plates. The ball starts bouncing and under some circumstances can even be projected back to you. Investigate the motion of the ball and parameters influencing the motion, including the orientation of the plates.

3. Hot Water Fountain

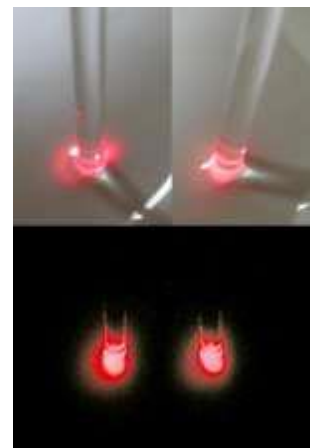
Partially fill a Mohr pipette with hot water. Cover the top of the pipette with your thumb. Turn the tip upwards and observe the fountain exiting the tip. Investigate the parameters describing the height of the fountain, and optimize them to get the maximum height.

4. Magnetic Train

Button magnets are attached to both ends of a small cylindrical battery. When placed in a copper coil such that the magnets contact the coil, this "train" starts to move. Explain the phenomenon and investigate how relevant parameters affect the train's speed and power.

5. Light Rings

Let a liquid jet fall onto a surface. If the contact point is illuminated by a laser beam, rings of light around the jet can be observed (see Figure). Investigate the light rings and determine how they depend on relevant parameters of the whole system.



6. Paper Vice

Take two similar paperback books and interleave a few pages at a time. Push the books together. Hold the two books by their spines and try to pull them apart. Investigate the parameters that set the limits of being able to separate the books.

7. Frisbee Vortices

When a vertical plate is partially submerged in water and pulled in a direction normal to the plate, a pair of vortices is created in the surface of the water. Under certain conditions, these vortices travel along the surface for a long distance. Investigate the parameters influencing the motion and stability of these vortices..

End of the 7 New Zealand Young Physicists' Tournament problems for 2016.

Important information :

Student teams work to gain an appropriate solution to the problems in the months leading up to the competition. In the competition teams challenge each other to report on a different problem in each structured debate called a Physics Fight (PF).

During the three rounds of physics fights the team acting as Reporter may reject the challenge of **two different problems** in total without penalty. For every subsequent rejection, the coefficient of the Reporter (the value the judges score is multiplied by), is decreased by 0.2. All teams must report on **three different** problems during the course of the regional tournaments.

Any school in New Zealand is able to request entry into NZYPT prior to the published deadline. In cases where a school does not have enough suitable students to enter a team, schools may combine, at the discretion of the NOC, to form a team.

An NZYPT team is composed of three secondary school students who are in full time education at secondary school. The composition of the team cannot be changed during the tournament.

Students are encouraged to seek advice from any source to develop their own solution, but they should be prepared to answer the question “where did you get that from?”. Significant sources should be acknowledged. The jurors will judge all PFs according to the international juror guidelines http://www.iypt.org/images/4/43/scoring_guidelines.pdf

All teams must bring **at least one** teacher / judge **per team**. The competition cannot take place without sufficient judges. Any team who cannot bring at least one teacher per team to the event must contact Gavin Jennings at g.jennings@ags.school.nz to see if it is possible for the team to participate.

How to apply

Online application:	By post:
<p>Complete the following entry form and return it to g.jennings@ags.school.nz</p> <p>Pay electronically,</p> <p>IYPT New Zealand bank account ASB Bank Account: 12-3044-0488590-00 Account name: IYPT New Zealand Please put your full school name on the reference. (eg St Peters Newmarket)</p>	<p>Print off and complete the form,</p> <p>Return with a cheque (made payable to IYPT New Zealand) to</p> <p>Jonathan Fry, IYPTNZ treasurer c/o Westlake Girls High School, 2 Wairau Road, Milford, 0627</p>

Entry form for teams that must be returned with payment follows on the next page.

New Zealand Young Physicists' Tournament 2016 Entry form

School name : _____ (* = this must be completed)

Entry form for _____ * (one or two) teams in NZYPT 2016 for the
AKL / WEL / ChCh (delete as appropriate) regional competition.

	Early bird rate (paid by Friday December 4 th 2015)	Regular rate (paid by February 12 th 2016)	
Team 1 _____ School *	\$105	\$180 (Team 1)	\$ ___
1 (Captain): (name) _____ * Email _____ *			
2: _____ * Email _____ *			
3. _____ * Email _____ *			
Teacher _____ * Email _____ *			
Team 2 _____ School *	\$105	\$180 (Team 2 if appropriate)	\$ ___
1 (Captain): (name) _____ * Email _____ *			
2: _____ * Email _____ *			
3. _____ * Email _____ *			
Teacher _____ * Email _____ *			
		TOTAL (for all teams)	\$???

Entry form conditions

All teams consist of 3 students with one of the team nominated as the captain.

All teams need to supply NZYPT with the names and contact email addresses of the team members.

Please note : Participants names and email addresses may be shared with sponsors of the tournament.

Full Team details of the **3 students** in each team do **not** have to be sent in to enrol a team and claim the earlybird discount.

Full team details of names and email addresses of students and teachers must be sent to g.jennings@ags.school.nz by February 12th 2016. This allows for team details to be included in the tournament booklets.

All teams must bring **at least** one teacher / judge **per team**. The competition cannot take place without sufficient judges. A team who cannot bring at least one teacher per team to the event must contact Gavin Jennings g.jennings@ags.school.nz to see if it is possible for the team to participate.

The team entry fee includes refreshments throughout the day as well as lunch for all team members and teachers / judges at the tournament. No further entry fee is required for the national final.

Teams winning through the regional tournaments to the national final in Auckland are responsible for all of their travelling and accommodation expenses required to participate in the final.

NZYPT will try to assist with the booking flights to Auckland from Christchurch and Wellington.

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