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|  | New Zealand Young Physicists’ Tournament 2015 |  |

Entries are now open for the 2015 New Zealand Young Physicists’ Tournament.

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| Saturday 7th March 2015 | Regional tournaments (Auckland/Wellington/Christchurch) |
| Saturday 21st March 2015 | National final (Wellington) |

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| Thursday 2nd April 2015 | NZ squad selection (venue to be announced ) |

The 7 Problems for NZYPT 2015

**1. Liquid Film Motor**

Form a soap film on a flat frame. Put the film in an electric field parallel to the film surface and pass an electric current through the film. The film rotates in its plane. Investigate and explain the phenomenon.



**2. Two Balloons**

Two rubber balloons are partially inflated with air and connected together by a hose with a valve. It is found that depending on initial balloon volumes, the air can flow in different directions. Investigate this phenomenon.

**3. Magnus Glider**

Glue the bottoms of two light cups together to make a glider. Wind an elastic band around the centre and hold the free end that remains. While holding the glider, stretch the free end of the elastic band and then release the glider. Investigate its motion.

**4. Singing Blades of Grass**

It is possible to produce a sound by blowing across a blade of grass, a paper strip or similar. Investigate this effect.

**5. Thick Lens**

A bottle filled with a liquid can work as a lens. Arguably, such a bottle is dangerous if left on a table on a sunny day. Can one use such a ‘lens’ to scorch a surface?

**6. Magnetic Pendulum**

Make a light pendulum with a small magnet at the free end. An adjacent electromagnet connected to an AC power source of a much higher frequency than the natural frequency of the pendulum can lead to undamped oscillations with various amplitudes. Study and explain the phenomenon.

**7. Circle of Light**

When a laser beam is aimed at a wire, a circle of light can be observed on a screen perpendicular to the wire. Explain this phenomenon and investigate how it depends on the relevant parameters.

End of the 7 New Zealand Young Physicists’ Tournament problems for 2015.

**Important information:**

During the physics fights (PFs) the Reporter may reject the challenge of **two different problems** in total without penalty. For every subsequent rejection, the coefficient of the Reporter (see section X), 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, schools may combine, at the discretion of the NOC, to form a team.

An NZYPT team is composed of three secondary school students. The composition of the team cannot be changed during the tournament

Students are encouraged to get 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 team 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

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

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

**New Zealand Young Physicists’ Tournament Entry 2015**

School name : ????

We would like to enter ???? teams in NZYPT 2015

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|  | Early bird rate(paid by Friday December 4th 2014) | Regular rate (paid by February 13th 2015) |  |
| Team 1\* ???? | $105 | $180 | $ ??? |
| Student 1 (captain): ???? |  |  |  |
| Student 2: ???? |  |  |  |
| Student 3. ???? |  |  |  |
| Teacher ???? |  |  |  |
|  |  |  |  |
| Team 2\*???? | $105 | $180 | $ ??? |
| Student 1 (captain): ???? |  |  |  |
| Student 2: ???? |  |  |  |
| Student 3. ???? |  | TOTAL | $ ??? |
| Teacher ???? |  |  |  |

\*Full Team details do **not** have be sent in to enrol a team, but full details should be sent to g.jennings@ags.school.nz by February 20th 2015.

Entry fee includes refreshments and lunch for team members at regionals and, for finalists, refreshments and lunch at the final.

Teams reaching the nation final in Wellington are responsible for travelling expenses required to participate in the final. NZYPT will try to assist with booking flights to Wellington.

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