

## CAMPEP Graduate Program Report

AAPM Washington, 2 August 2016

B Clark, PhD  
Chair, CAMPEP GEPRC

### Current Status

- # Accredited graduate programs: 50
- # Accredited DMP programs: 3
- # Programs in initial review process: 3
  
- # Accredited programs in:
  - US 37
  - Canada 11
  - Outside North America 2

### Annual Report Data

- 51 institutions responded
- 49 accredited programs, 2 non-accredited
- 36 entire program accredited
- 13 some tracks not accredited
- 43 programs do not accept students with missing physics courses
- 8 programs accept students with missing physics courses and remediate

### Program Response / Degree Offerings

# Programs offering:	2010	2011	2012	2013	2014	2015
MS Degrees	31	32	39	43	43	46
PhD Degrees	22	24	29	30	34	34
MS & PhD Degrees	19	20	27	28	30	30
MS Degree Only	12	9	11	13	13	13
PhD Degree Only	3	2	2	2	3	3
DMP	1	1	1	1	2	4

### Graduate Program Applicants

	2011	2012	2013	2014	2015
# applications reviewed	1604	2061	1801	1953	1836
# offered admission	484	570	545	602	577
# matriculated	258	311	289	324	294
Average GPA (MS/PhD)	3.56	3.5/3.6	3.5/3.6	3.5/3.6	3.5/3.6

#### Entering Class – Gender

	2011	2012	2013	2014	2015
MS/MSc – Male	72%	68%	64%	69%	67%
PhD – Male	80%	70%	71%	69%	68%
DMP - Male				60%	85%

### Entering Class - Nationality

Nationality	2011	2012	2013	2014	2015
MS/MSc – Domestic	82%	82%	91%	80%	80%
PhD – Domestic	75%	84%	80%	77%	78%

## Enrollment and Graduates

	2011	2012	2013	2014	2015
<b>Enrollment</b>					
MS/MSc	450	466	467	458	449
PhD	465	534	572	559	572
DMP		20	20	25	35
Certificate		18	34	49	105
<b>Total</b>	<b>915</b>	<b>1038</b>	<b>1093</b>	<b>1091</b>	<b>1161</b>
<b>Graduates</b>					
MS/MSc	148	198	162	164	202
PhD	67	80	113	107	99
DMP			4	5	6
Certificate			9	21	25
<b>Total</b>	<b>215</b>	<b>278</b>	<b>288</b>	<b>297</b>	<b>332</b>

## Premature Departure

23 Programs reported 31 (2.7%) students left prior to completion  
25 (2.3%) last year

Poor academic performance	12
Medical or personal reasons	7
Topic not a match for interests	7
Left to take job	3
Other	2
<b>Total</b>	<b>31</b>

## MS/MSc Graduate Destination

	2011	2012	2013	2014	2016
Entered RT residency	33 (24%)	44 (22%)	37 (23%)	40 (25%)	46 (23%)
Entered IP residency	1 (1%)	1 (<1%)	4 (3%)	5 (3%)	10 (5%)
Junior MP position	53 (38%)	62 (31%)	48 (30%)	39 (24%)	26 (25%)
Another degree	20 (14%)	49 (25%)	27 (17%)	39 (24%)	51 (13%)
Position in industry	12 (9%)	6 (3%)	17 (11%)	14 (19%)	19 (10%)
Position in government				4 (2%)	5 (3%)
Still seeking position		16 (8%)	16 (10%)	8 (5%)	9 (5%)
Other	20 (14%)	17 (9%)	12 (7%)	15 (9%)	32 (16%)

## PhD Graduate Destination

	2011	2012	2013	2014	2015
Entered RT residency	23 (34%)	24 (30%)	28 (25%)	31 (29%)	44 (47%)
Entered IP residency	5 (7%)	6 (8%)	4 (4%)	7 (7%)	6 (6%)
Junior MP position	15 (22%)	18 (23%)	26 (24%)	16 (15%)	8 (8%)
Post-doc	15 (22%)	11 (14%)	18 (16%)	14 (13%)	20 (20%)
Another degree	2 (3%)	1 (1%)	3 (3%)	0	1 (1%)
Position in industry	4 (6%)	9 (11%)	9 (8%)	5 (5%)	7 (7%)
Position in government				2 (2%)	2 (2%)
Still seeking a position		6 (8%)	5 (5%)	2 (2%)	2 (2%)
Other	4 (6%)	4 (5%)	11 (10%)	0	8 (8%)

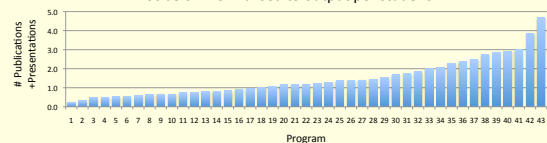
## Other Graduate Destination

	DMP	Certificate
Entered RT residency	N/A	13 (57%)
Entered IP residency	N/A	1 (4%)
Junior MP position	6 (100%)	
Post-doc	N/A	5 (22%)
Another degree		1 (4%)
Took job in industry		
Still seeking a position		2 (9%)
Other		1 (4%)

## Faculty and Student Productivity

	2011	2012	2013	2014	2015
Mean # Faculty/Program (formal affiliation)	20.2 (3-65)	20.0 (5-70)	18.9 (3-66)	17.5 (3-66)	1.3 (2-66)

43 Programs reported academic activity  
538 peer reviewed publications, 957 presentations by students, range 0-5 per student  
Plot below normalised to output per student



Most publications – McGill University (103)  
Most presentations – Western University (98)

## Plans for DMP

	2011	2012	2013	2014	2015
No	22	26	29	32	39
Under consideration	4	5	4	4	3
In preparation	4	5	4	5	1
Waiting for institution approval	3	1	3	2	4
Awaiting CAMPEP accreditation	0	0	2	2	1
CAMPEP accredited	1	1	1	2	3

## Certificate Program Rationale

From the CAMPEP website:

- To recognize the important contributions to the discipline from individuals from a variety of academic backgrounds
- Restricted to post-doctoral applicants from related branches of physics or engineering

### Process

- Completion of a doctorate degree in relevant topic
- Completion of 6 designated graduate courses in either:
  - An accredited graduate program or
  - An accredited certificate program or
  - Any other graduate program followed by an assessment by either a residency PD or the CAMPEP GEPRC

## Current Status (July 2016)

- # Accredited certificate programs: 22
- # Located in residency programs: 4
- # Residency program applications: 3

## Certificate Programs

22 programs accredited, 15 programs reporting student numbers in 2015

	# Applicants	# Students Currently Registered	# Students Graduated	# Residency Positions	# PostDoc Positions
13 graduate programs	107	105	25	13	5
2 residency programs	3	8	3	3	0
<b>Total</b>	<b>110</b>	<b>113</b>	<b>28</b>	<b>16</b>	<b>5</b>
2014	63	49	21	10	5
2013	53	36	9	7	1

## Sample of Certificate Students PhD Topics

- Low Dose Dosimetry & Carcinogenic Risk
- Gravitational Waves from IM Black Holes
- Investigation of Staged Laser-Plasma Acceleration
- Membrane polymer physics
- Search for  $Kl \rightarrow \pi l 0 \nu$  nubar
- Simulation of the SNO Neutral Current Detectors
- Trapping Rydberg atoms in an optical lattice
- Dosimetry for a Custom Sr-90 Irradiation Device
- Structure and phase behavior of aluminate glass produced using aerodynamic levitation & laser heating
- Knee Osteoarthritis: gagCEST MR Imaging of Articular Cartilage
- Gravitational waves from intermediate mass binary black holes
- weak process 2001 – 2007 of nuclear muon capture by the proton
- The Dynamics in the Upper Atmospheres of Mars and Titan
- Electroweak Physics as a Test of the Standard Model and Beyond
- Dynamics of Myosin II Organization Into Contractile Networks and Fibers at the Medial Cell Cortex
- Production, Processing and Assembly of Carbon Nanotubes

## Summary

### Acknowledgement

Thanks to all program directors for timely response to our request for data.

- The annual report is an effective method of gathering statistics and monitoring program activity
- Are there questions that could or should be removed? Or added?