

**School of Mathematics and Physics Performance Management Matrix – Rolling 3-year targets<sup>1</sup>**

<b>Output measures per 3-year period</b>	<b>Lecturer (up to 3 years post-probation)</b>	<b>Experienced Lecturer/Senior Lecturer/Reader</b>	<b>Professor</b>
<i>Publications</i>	<p>3 outputs per year (Physics UoA) or 2 per year (Pure Maths/SOR) in recognised international journals, including a significant proportion (over 50% for Physics; 25% for Pure Maths/SOR) of outputs in top 10 journals in the subject area.<sup>2,3</sup></p> <p>Minimum output standard 2*, as defined in RAE 2008.<sup>4</sup></p>	<p>Sustained outputs of at least 3 per year (Physics UoA) or 2 per year (Pure Maths/SOR) in recognised international journals, including a significant proportion (over 50% for Physics; 25% for Pure Maths/SOR) in top 10 journals in the subject area.<sup>3</sup></p> <p>Outputs at minimum 2*, with significant proportion at higher ratings, as defined in RAE2008.<sup>4</sup></p>	<p>Sustained outputs of at least 3 per year (Physics UoA) or 2 per year (Pure Maths/SOR) in recognised international journals, with over 80% (Physics) or 50% (Pure Maths/SOR) in top 10 journals in the subject area.<sup>3</sup></p> <p>Outputs to be substantially at higher star ratings, as defined in RAE2008.<sup>4</sup></p>
<i>Research funding</i>	<p>Record of grant applications to support research activity, appropriate to subject area.<sup>5</sup></p> <p>Secure funding (e.g. Royal Society grant) to support research activity.</p>	<p>Secure substantial grants at nationally/internationally competitive level (including fEC Investigator funding), plus consistent record of significant grant applications, appropriate to subject area.<sup>5</sup></p> <p>Some knowledge transfer and industrial exploitation of research, if appropriate to subject area.<sup>5</sup></p>	<p>Sustained record of securing substantial, high quality research funding from nationally and internationally competitive sources (including fEC Investigator funding), and of consistent research funding applications, appropriate to subject area.<sup>5</sup></p> <p>Major knowledge transfer and industrial exploitation of research, if appropriate to subject area.<sup>5</sup></p>
<i>Research supervision</i>	<p>Effective PGR student supervision.</p>	<p>Effective PGR student supervision, plus some PDRA supervision if appropriate to subject area.</p>	<p>Research team leadership including PGR student supervision, and PDRA supervision if appropriate to subject area.</p>
<i>External collaboration</i>	<p>Evidence of developing external research links.</p>	<p>Established links with external research groups at national and international level.</p>	<p>Major national and international research links, as appropriate to the subject area, including leadership of research projects.</p>

<b>Output measures per 3-year period</b>	<b>Lecturer (up to 3 years post-probation)</b>	<b>Experienced Lecturer/Senior Lecturer/Reader</b>	<b>Professor</b>
<i>Research esteem</i>	National and international conference presentations; refereeing for papers and/or grants proposals, at a level appropriate to subject area.	Invited international conference presentations; involvement in local and international conference organisation.  Evidence of significant national and some international research recognition.	Clear evidence of international research recognition, e.g. plenary lectures, invited presentations/publications; significant roles in national and international research-related bodies, including evidence of influencing policy, as appropriate to subject area; prestigious prizes and elected fellowships.  Clear evidence of leadership role within Research Cluster, including where appropriate mentoring and support of more junior academic staff.
<i>Teaching contribution</i>	Contribute to education programmes as required. Support for student support mechanisms, e.g. Personal Tutor.	Contribute to education programmes as required. Support for student support mechanisms, e.g. Personal Tutor.  Development and leadership in delivery of modules and pathways.	Contribute significantly to education programmes as required. Support for student support mechanisms, e.g. Personal Tutor.  Development and leadership in delivery of modules and pathways.
<i>Teaching delivery</i>	PGCHET award.  Successful delivery of modules. <sup>6</sup>	Consistent record of delivery of modules, including more challenging modules (e.g. large classes; non-specialist). <sup>6</sup>	Consistent record of delivery of modules, including more challenging modules (e.g. large classes; non-specialist). <sup>6</sup>
<i>Administration</i>	Successful delivery of administration roles as required. <sup>7</sup>	Successful delivery of significant administration roles as required, e.g. Advisor of Studies. <sup>7</sup>	Successful delivery of major administration roles as required, e.g. DE/DR; Chair of School Committee; member of University Committee. <sup>7</sup>
<i>Other activities</i>	Successful promotion of subject area to potential students, the public and policy makers. <sup>7,8</sup>	Successful promotion of subject area to potential students, the public and policy makers. <sup>7,8</sup>  Service on local and national committees. <sup>7</sup>	Successful promotion of subject area to potential students, the public and policy makers. <sup>7,8</sup>  Service on national and international committees; University representation. <sup>7</sup>

## Explanatory Notes:

1. Indicative output and achievement targets for different grades of research-active academic staff in the School. Note that these are 3-year rolling targets and hence excess activity over one period may offset lower activity over another. For example, one very large grant received may offset several smaller ones or a lower application rate. DRs should use their experience in interpreting individual staff performance in the context of these targets.
2. In the context of the Performance Management Matrix, 'subject area' refers to the relevant sub-discipline within the generic research field. For example, for School staff in the Physics UoA, the subject areas will be those of their relevant research clusters, i.e. Astrophysics, Plasma Physics, Theoretical Atomic, Molecular and Optical Physics etc.
3. Lists of the Top 10 journals (provided below) produced for each subject area by the relevant DR, using e.g. ISI bibliometric data or RAE2008 information. These lists have been approved by the HoS.
4. Star rating as a measure of publication quality will be determined by the HoS in consultation with the School REF Committee and relevant DR. Publications must be in a subject area of strategic importance to the relevant research cluster and the School.
5. The School has overall research income REF targets in each UoA. These are based on a combination of our current performance in income generation, and the RAE2008 figures for our RG8 comparators.

Our income targets, per staff member per year, are:

- Physics UoA  
Total = £108K; RCUK = £86K; RCUK facility time = £73K.
- Pure Mathematics UoA  
Total = £6.7K; RCUK = £4.9K.
- Statistics and Operational Research UoA  
Total = £11.8K; RCUK = £6.2K.
- As well as research income targets, the School also has a target for all research-active academic staff of 0.20 FTE per year of fEC Investigator funding

However, the nature and availability of research funding varies significantly even within a UoA. For example, some subject areas make extensive use of RCUK central facilities and hence staff in these areas would be expected to have greater RCUK facility income and lower direct RCUK income. Similarly, some subject areas are more suited to industrial exploitation and hence industrial funding.

DRs should therefore use their experience to judge what is an appropriate income level for specific individuals. However, all research-active academic staff are expected to generate external income, with a greater level of expectation for staff in the Physics UoA due to the larger amounts of funding available.

6. Level of performance to be assessed by the HoS in consultation with DE and/or ADE. Criteria used for assessment will include: TEQs; minutes of SSCC and Module Review meetings; comments from external examiners.
7. Level of performance to be assessed by the HoS in consultation with relevant staff, e.g. DE, DR, Chair of relevant School Committee.

8. Criteria used for assessment will include: delivery of school's talks; attendance at Career's Fairs; active support for UCAS activities; delivery of other School-sponsored outreach activities.

### **Top 10 Journals**

Below we summarise, for each Research Cluster in the School, their Top 10 journals. These have been agreed by the HoS and relevant DR. We note that some Clusters have more than one list, due to the diverse nature of their research portfolio, and in these instances the research area is identified to which the list applies. One Cluster (Astrophysics Research Centre) lists fewer than 10 journals.

#### **1. Astrophysics Research Centre**

<b>Journal</b>	<b>Impact factor</b>	<b>Ranking</b>	<b>ISI subject category</b>
<i>Nature</i>	31.4	1/42	Multidisciplinary science
<i>Science</i>	28.1	2/42	Multidisciplinary science
<i>Astrophys J Letters</i>	6.3	6/48	Astronomy & Astrophysics
<i>Astrophys J</i>	6.3	6/48	Astronomy & Astrophysics
<i>Monthly Notices Royal Astron Soc</i>	5.2	7/48	Astronomy & Astrophysics
<i>Astron J</i>	4.8	9/48	Astronomy & Astrophysics
<i>Astron Astrophys</i>	4.2	11/48	Astronomy & Astrophysics

Notes:

1. ISI sometimes combines a journal and its letter section when calculating impact factors. This affects a number of journals but especially *Astrophysical Journal*, where it is widely accepted that important and timely results are published in the *Letters* section. Indeed, *Astrophysical Journal Letters* can be considered as equivalent to *Physical Review Letters* and it has therefore been listed separately.
2. Some of the highest ranking journals in astrophysics (e.g. *Annual Reviews of Astronomy and Astrophysics*; ranked 1/48) have been excluded as publication is by invitation only and the articles do not contain original material. Hence they are better considered under esteem.
3. Staff in the Astrophysics Research Centre also have research programmes in laboratory plasma physics and computational atomic physics, and the Top 10 lists for these programmes are given in Sections 4.1 and 5.2, respectively.

#### **2. Atomistic Simulation Centre**

<b>Journal</b>	<b>Impact factor</b>	<b>Ranking</b>	<b>ISI subject category</b>
<i>Nature</i>	31.4	1/42	Multidisciplinary science
<i>Science</i>	28.1	2/42	Multidisciplinary science
<i>Phys Rev B</i>	3.3	10/62	Physics: Condensed Matter
<i>Phys Chem &amp; Chemical Phys</i>	4.1	2/31	Physics: Atomic, Molecular & Chemical
<i>Phys Rev A</i>	2.9	6/31	Physics: Atomic, Molecular & Chemical
<i>Phys Rev E</i>	2.5	6/46	Physics: Mathematical
<i>J Chem Phys</i>	3.2	5/31	Physics: Atomic, Molecular & Chemical
<i>Acta Materialia</i>	3.7	1/63	Metallurgy & Metallurgical Engineering
<i>J Phys Chem B</i>	4.2	22/113	Chemistry: Physical
<i>J Phys Cond Matter</i>	1.9	17/62	Physics: Condensed Matter

Notes:

1. Any relevant journal which has an impact factor greater than 7.0 is regarded to be a Top 10 journal, in addition to those listed above.
2. Individual staff may include different journals on their personal Top 10 list, with the express permission of the DR and HoS.

### 3. Centre for Nanostructured Media

#### 3.1 Applied Physics

Journal	Impact factor	Ranking	ISI subject category
<i>Nature</i>	31.4	1/42	Multidisciplinary science
<i>Science</i>	28.1	2/42	Multidisciplinary science
<i>Nature Materials</i>	23.1	2/95	Physics: Applied
<i>Adv Functional Materials</i>	6.8	4/95	Physics: Applied
<i>Small</i>	6.5	5/95	Physics: Applied
<i>Applied Physics Letters</i>	3.7	10/95	Physics: Applied
<i>Nanotechnology</i>	3.5	12/95	Physics: Applied
<i>J Applied Physics</i>	2.2	20/95	Physics: Applied
<i>J Phys D</i>	2.1	26/95	Physics: Applied
<i>Thin Solid Films</i>	1.9	30/95	Physics: Applied

#### 3.2 Materials Science, Nanoscience and Nanotechnology

Journal	Impact factor	Ranking	ISI subject category
<i>Nature</i>	31.4	1/42	Multidisciplinary science
<i>Science</i>	28.1	2/42	Multidisciplinary science
<i>Nature Materials</i>	23.1	1/192	Materials Science: Multidisciplinary
<i>Nature Nanotechnology</i>	20.5	2/192	Materials Science: Multidisciplinary
<i>Nano Letters</i>	10.3	6/192	Materials Science: Multidisciplinary
<i>Advanced Materials</i>	8.2	7/192	Materials Science: Multidisciplinary
<i>ASC Nano</i>	5.5	7/52	Nanoscience & Nanotechnology
<i>Chemistry of Materials</i>	5.0	14/192	Materials Science: Multidisciplinary
<i>Plasmonics</i>	3.5	22/192	Materials Science: Multidisciplinary
<i>Nanotechnology</i>	3.5	11/52	Nanoscience & Nanotechnology

#### 3.3 Condensed Matter Physics and Optics

Journal	Impact factor	Ranking	ISI subject category
<i>Nature</i>	31.4	1/42	Multidisciplinary science
<i>Science</i>	28.1	2/42	Multidisciplinary science
<i>Nature Photonics</i>	25.0	1/64	Optics
<i>Nature Physics</i>	16.8	3/68	Physics: Multidisciplinary
<i>Phys Rev Letters</i>	7.2	5/68	Physics: Multidisciplinary
<i>Optics Express</i>	3.9	3/64	Optics
<i>Optics Letters</i>	3.8	4/64	Optics
<i>Phys Rev B</i>	3.3	10/62	Physics: Condensed Matter
<i>J Phys: Condensed Matter</i>	1.9	17/62	Physics: Condensed Matter
<i>J Magnetism Mag Materials</i>	1.3	32/62	Physics: Condensed Matter

#### 4. Centre for Plasma Physics

##### 4.1 Laser Plasmas

Journal	Impact factor	Ranking	ISI subject category
<i>Nature</i>	31.4	1/42	Multidisciplinary science
<i>Science</i>	28.1	2/42	Multidisciplinary science
<i>Phys Rev Letters</i>	7.2	5/68	Physics: Multidisciplinary
<i>Nature Physics</i>	16.8	3/68	Physics: Multidisciplinary
<i>Applied Phys Letters</i>	3.7	10/95	Physics: Applied
<i>Phys Rev E</i>	2.5	6/26	Physics: Fluids & Plasmas
<i>New J Phys</i>	3.4	9/68	Physics: Multidisciplinary
<i>Phys Plasmas</i>	2.4	7/26	Physics: Fluids & Plasmas
<i>Plasma Phys Controlled Fusion</i>	2.3	11/26	Physics: Fluids & Plasmas
<i>Laser and Particle Beams</i>	4.4	8/95	Physics: Applied

##### 4.2 Low Temperature Plasmas

Journal	Impact factor	Ranking	ISI subject category
<i>Nature</i>	31.4	1/42	Multidisciplinary science
<i>Science</i>	28.1	2/42	Multidisciplinary science
<i>Phys Rev Letters</i>	7.2	5/68	Physics: Multidisciplinary
<i>Applied Phys Letters</i>	3.7	10/95	Physics: Applied
<i>Plasma Sources Sci and Tech</i>	2.7	5/26	Physics: Fluids & Plasmas
<i>Phys Rev E</i>	2.5	6/26	Physics: Fluids & Plasmas
<i>Phys Plasmas</i>	2.4	7/26	Physics: Fluids & Plasmas
<i>Europhys Letters</i>	2.2	15/68	Physics: Multidisciplinary
<i>J Appl Phys</i>	2.2	20/95	Physics: Applied
<i>J Phys D</i>	2.1	26/95	Physics: Applied

##### 4.3 Radiation Physics/Biology Interface

Journal	Impact factor	Ranking	ISI subject category
<i>Nature</i>	31.4	1/42	Multidisciplinary science
<i>Science</i>	28.1	2/42	Multidisciplinary science
<i>Cell</i>	31.3	1/275	Biochemistry & Molecular Biology
<i>Phys Rev Letters</i>	7.2	5/68	Physics: Multidisciplinary
<i>Int J Rad Onc Phys Bio</i>	4.6	7/92	Radiology, Nuclear Medicine & Medical Imaging
<i>Appl Phys Letters</i>	3.7	10/95	Physics: Applied
<i>Medical Phys</i>	3.9	13/92	Radiology, Nuclear Medicine & Medical Imaging
<i>New J Phys</i>	3.4	9/68	Physics: Multidisciplinary
<i>Radiation Research</i>	3.4	14/72	Biology
<i>Phys Medicine Biology</i>	2.8	9/52	Engineering: Biomedical

#### 4.4 Atomic and Molecular Physics

Journal	Impact factor	Ranking	ISI subject category
<i>Nature</i>	31.4	1/42	Multidisciplinary science
<i>Science</i>	28.1	2/42	Multidisciplinary science
<i>Phys Rev Letters</i>	7.2	5/68	Physics: Multidisciplinary
<i>J Phys B</i>	2.1	12/31	Physics: Atomic, Molecular and Chemical
<i>Phys Rev A</i>	2.9	6/31	Physics: Atomic, Molecular and Chemical
<i>New J Phys</i>	3.4	9/68	Physics: Multidisciplinary
<i>Phys Reports</i>	18.5	2/68	Physics: Multidisciplinary
<i>Reports Prog Phys</i>	12.1	4/68	Physics: Multidisciplinary
<i>J Chem Phys</i>	3.1	5/31	Physics: Atomic, Molecular & Chemical
<i>ChemPhysChem</i>	3.6	3/31	Physics: Atomic, Molecular & Chemical

Notes:

1. Individual staff may include different journals on their personal Top 10 list, with the express permission of the DR and HoS.

#### 5. Centre for Theoretical Atomic, Molecular and Optical Physics

##### 5.1 Atomic, Molecular and Optical Physics

Journal	Impact factor	Ranking	ISI subject category
<i>Nature</i>	31.4	1/42	Multidisciplinary science
<i>Science</i>	28.1	2/42	Multidisciplinary science
<i>Nature Physics</i>	16.8	3/68	Physics: Multidisciplinary
<i>Nature Photonics</i>	25.0	1/95	Physics: Applied
<i>Phys Rev Letters</i>	7.2	5/68	Physics: Multidisciplinary
<i>Phys Rev A</i>	2.9	6/31	Physics: Atomic, Molecular & Chemical
<i>J Phys B</i>	2.1	12/31	Physics: Atomic, Molecular & Chemical
<i>New J Phys</i>	3.4	9/68	Physics: Multidisciplinary
<i>J Chem Phys</i>	3.1	5/31	Physics: Atomic, Molecular & Chemical
<i>Europhys Letters</i>	2.2	15/68	Physics: Multidisciplinary

##### 5.2 Computational Atomic Physics

Journal	Impact factor	Ranking	ISI subject category
<i>Nature</i>	31.4	1/42	Multidisciplinary science
<i>Science</i>	28.1	2/42	Multidisciplinary science
<i>Nature Physics</i>	16.8	3/68	Physics: Multidisciplinary
<i>Astrophys J</i>	6.3	6/48	Astronomy & Astrophysics
<i>Astron Astrophys</i>	4.2	11/48	Astronomy & Astrophysics
<i>Monthly Notices RAS</i>	5.2	7/48	Astronomy & Astrophysics
<i>Atom Data Nucl Data Tables</i>	1.5	17/31	Physics: Atomic, Molecular & Chemical
<i>J Phys B</i>	2.1	12/31	Physics: Atomic, Molecular & Chemical
<i>Comp Phys Commun</i>	2.1	11/46	Physics: Mathematical
<i>Phys Rev A</i>	2.9	6/31	Physics: Atomic, Molecular & Chemical

## 6. Pure Mathematics Research Centre

For Pure Mathematics journals, impact factors and ISI rankings are not meaningful, with many journals not even appearing on the ISI Database. Instead, the development of the Top 10 lists has been informed by the most popular journals for top-rated RAE2008 submissions in the Pure Mathematics UoA, with several non-relevant specialist journals omitted and a few important specialist ones added. In addition, we note that the ISI Database alone lists 215 Mathematics journals, and hence our lists are highly selective.

### 6.1 Functional Analysis

*London Mathematical Society Publications*  
*Journal of Functional Analysis*  
*Duke Mathematical Journal*  
*Journal of the American Mathematical Society*  
*Transactions of the American Mathematical Society*  
*Annals of Mathematics*  
*Mathematische Annalen*  
*Quarterly Journal of Mathematics Oxford*  
*Advances in Mathematics*  
*American Journal of Mathematics*

### 6.2 Algebra

*Journal of Algebra*  
*London Mathematical Society Publications*  
*Duke Mathematical Journal*  
*Journal of the American Mathematical Society*  
*Transactions of the American Mathematical Society*  
*Annals of Mathematics*  
*Mathematische Annalen*  
*Quarterly Journal of Mathematics Oxford*  
*Journal of Pure and Applied Algebra*  
*Communications in Algebra*

### 6.3 Homotopy Theory

*London Mathematical Society Publications*  
*Duke Mathematical Journal*  
*Journal für die reine und angewandte Mathematik*  
*Journal of the American Mathematical Society*  
*Transactions of the American Mathematical Society*  
*Annals of Mathematics*  
*Mathematische Annalen*  
*Mathematische Zeitschrift*  
*Journal of Pure and Applied Algebra*  
*Geometriae Dedicata*

Notes:

1. The London Mathematical Society Publications consists of 3 journals (Bulletin, Journal and Proceedings). Submission is not to a specific journal, and the London Mathematical Society assigns a paper to a particular journal based primarily on its length.
2. Individual staff may include different journals on their personal Top 10 list, with the express permission of the DR and HoS.



## 7. Centre for Statistical Science and Operational Research

As for Pure Mathematics journals, impact factors and ISI rankings are not particularly meaningful in Statistics and Operational Research. Hence our list has been derived by examining the highly successful RAE2008 returns from Oxford, Cambridge and Imperial, the top 3 RAE2008 returns. However, instead of providing separate lists for Statistics and Operational Research, we list a total of 22 top journals covering both areas, indicating if the journal covers Statistics (S), Operational Research (OR) or both (SOR). We note that the ISI Database alone lists 156 SOR journals, and hence our list is highly selective.

*Biostatistics* (S)  
*Management Science* (OR)  
*J Royal Stat Soc Ser B* (S)  
*J American Stat Assoc* (S)  
*Stat Science* (S)  
*Annals Stat* (S)  
*Biometrics* (SOR)  
*Stat Medicine* (SOR)  
*J Roy Stat Soc Ser A* (SOR)  
*Biometrika* (SOR)  
*J Roy Stat Soc Ser C* (SOR)  
*J Scheduling* (OR)  
*Scand J Stat* (SOR)  
*Queueing Sys* (OR)  
*Comput Stat Data Analysis* (SOR)  
*Annals Oper Research* (OR)  
*J Oper Res Soc* (OR)  
*Lifetime Data Analysis* (SOR)  
*IEEE Trans Comp Bio Bioinform* (SOR)  
*Methodol Comput Appl Prob* (SOR)  
*Eur J Oper Res* (OR)  
*Inform J Comput* (OR)