REPORTING SESSION

Institute of Physics
Polish Academy of Sciences
Research Activity in 2018
SUMMARY

Scientific employees

position	number
Professor Member of Academy	4 (4)
Professor	42 (41)
Associate professor	27 (22)
Post-doc (adiunkt)	58 (55)
Assistant	13 (14)
Research-technical	48 (47)
TOGETHER	192 (183)
PhD students	94* (85)

* IF PAN – 69, IWC PAN – 16, CFT - 9

Number of employees in ON/SL	299 (293)

Grey numbers indicate analogical values for 2017

Promotions

Type of promotion	result
Obtained professor titles	1 (0)
Obtained degrees of „doktor habilitowany”	3* (6)
Obtained degrees of doctor	10** (3)
Number of PhD students (31.12.2018)	94 (85)
New PhD students accepted for 1st year	28*** (19)

* 2 from Institute of Physics PAN
** 7 from Institute of Physics PAN
*** 18 to Institute of Physics PAN

Grey numbers indicate analogical values for year 2017

Publications and patents

Number of employees in research (B+R)	290 (31.12.18)

index	TOGETHER	IF ≥ 3	MNiSW ≥ 40 pkt.	MNiSW ≥ 35 pkt.
Number of publications with Impact Factor („z listy filadelfijskiej”)	299 (328)	147 (138)	60 (71)	166 (175)
Patents domestic/international	6+1 (11+0)			

Grey numbers indicate analogical values for year 2017

10 publications with IF>10

1. Banerjee-Ghosh K., Dor O.B., Tassinari F., Capua E., Yochelis S., Capua A., Yang S., Parkin S.S., Sarkar S., Kronik L., **Baczewski L.**, Naaman R., Paltiel Y., *"Separation of enantiomers by their enantiospecific interaction with achiral magnetic"*, Science **360,** 1331-1334 (2018)

2. Wadley P., Reimers S., **Grzybowski M.**, Andrews C., Wang M., Chauhan J., Gallagher B.L., Campion R.P., Edmonds K.W., Dhesi S., Maccherozzi F., Novak V., Wunderlich J., Jungwirth T., *"Current polarity-dependent manipulation of antiferromagnetic domains"*, Nature Nanotechnology **13,** 362-365 (2018)

3. Spitzer F., Poddubny A., Akimov I.A., Sapega V.F., Klompmaker L., Kreilkamp L., Litvin L., Jede R., **Karczewski G., Wiater M., Wojtowicz T.**, Yakovlev D.R. , Bayer M., "*Routing the emission of a near-surface light source by a magnetic field",* Nature Physics **14**, 1043-1048**,** (2018)

4. Krempaský J., Muff S., Minár J., Pilet N., Fanciulli M., Weber A., Guedes E. , Caputo M., Muller E., **Volobuev V.**, Gmitra M., Vaz C., Scagnoli V., Springholz G., Dil J.H., *"Operando Imaging of all-Electric Spin Texture Manipulation in Ferroelectric and Multiferroic Rashba Semiconductors"*, Physical Review X **8**, 021067-1-11 (2018)

5. Polley C., **Buczko R.**, Forsman A., **Dziawa P., Szczerbakow A., Rechciński R., Kowalski B., Story T.**, Trzyna M., Bianchi M., Cabo A., Hofmann P., Tjernberg O., Balasubramanian T.,*"Fragility of the Dirac Cone Splitting in Topological Crystalline Insulator Heterostructures"*, ACS Nano **12**, 617-626 (2018)

In 2017 – there were 8 such papers

10 publications with IF>10

6. Gianfrate A., Dominici L., Voronych O., **Matuszewski M.**, Stobinska M., Ballarini D., De Giorgi M., Gigli G., Sanvitto D.,*"Superluminal X-waves in a polariton quantum fields"*, Light-Science & Applications **7**, 17119 (2018)

7. Estrecho E., Gan T., **Bobrovska N**., Fraser M. D., Steger M., Pfeiffer L., West K., Liew T. C. H., **Matuszewski M**., Snoke D. W., Truscott A. G., Ostrovskaya E. A., "*Single-shot condensation of exciton polaritons and the hole burning effect*", Nature Communications **9,** 2944-1-9, (2018)

8. Roberts S.J., **Szabla R.**, Todd Z.R., Stairs S., Bucar D., Sponer J., Sasselov D.D., Powner M.W., "*Selective prebiotic conversion of pyrimidine and purine anhydronucleosides into Watson-Crick base-pairing arabino-furanosyl nucleosides in water"*, Nature Communications **9,** 4073-1-10, (2018)

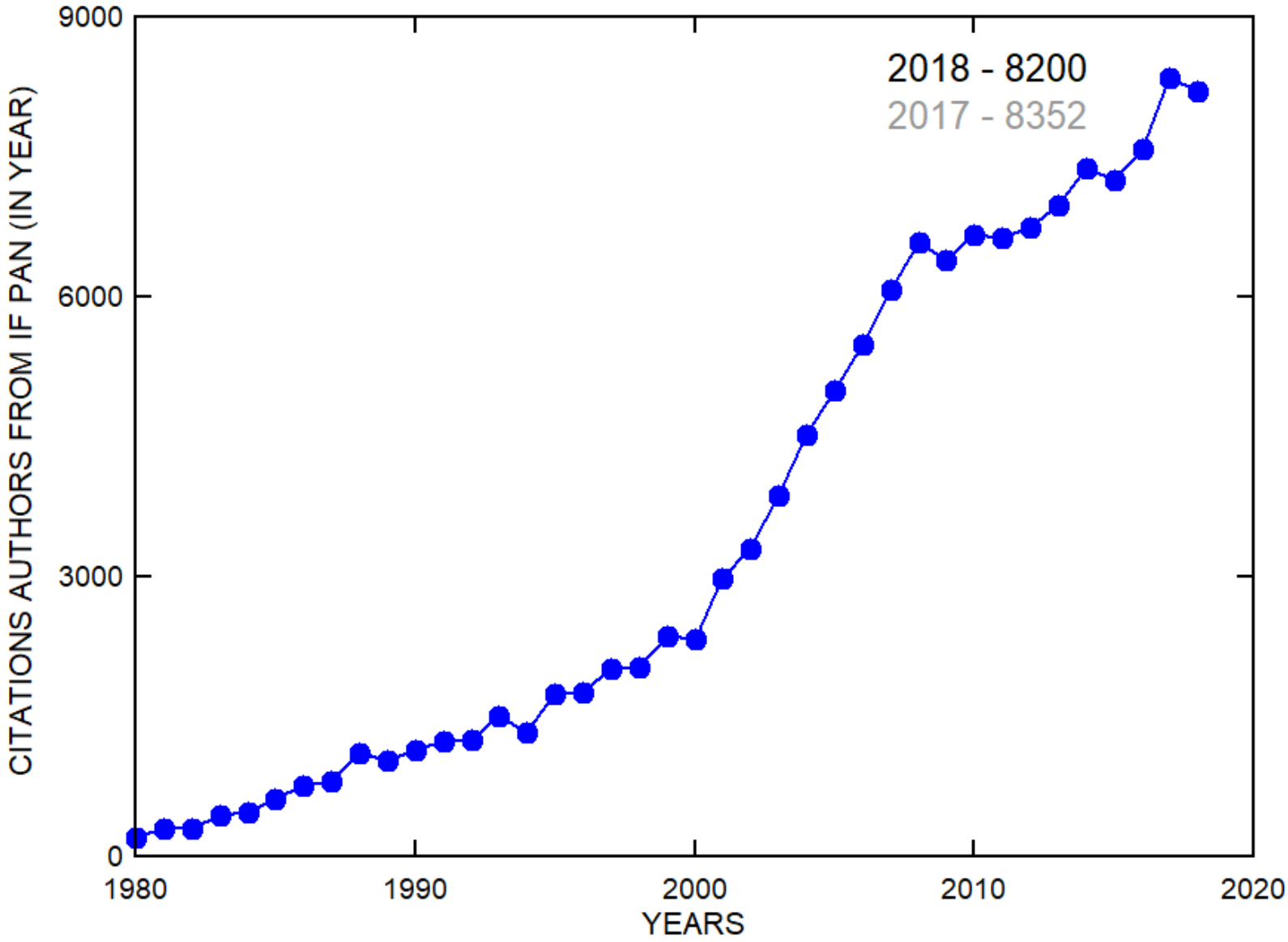
9. Surrente A. , **Kłopotowski Ł**. , Zhang N. , Baranowski M. , Mitioglu A.A. , Ballottin M. , Christianen P.C. , Dumcenco D. , Kung Y. , Maude D.K. , Kis A. , Płochocka P., "Intervalley Scattering of Interlayer Excitons in a MoS2/MoSe2/MoS2 Heterostructure in High Magnetic Field", Nano Letters **18 (6)**, 3994-4000 (2018)

10. Kang J., Krizek F., **Załuska-Kotur M**., Krogstrup P., **Kacman P**., Beidenkopf H. , Shtrikman H., *"Au-Assisted Substrate-Faceting for Inclined Nanowire Growth"*, Nano Letters **18 (7)**, 4115-4122 (2018)

In 2017 – there were 8 such papers

Citation number (Web of Science)

Authors from IF PAN cited ≥100 times in 2018	41 (41)



Grey numbers indicate analogical values for 2017

Scientific projects

type	number
Realized projects (started, continued or finished)	100 (93)
Projects started in 2018	23 (26)
Projects finished in 2018	39 (28)
Stipends as projects	4 (5)
Employees hired from projects	31 (27)

Scientific projects

Types of scientific projects:

Projects OPUS	**32**
Projects PRELUDIUM	**11**
Projects SONATA	**9**
Projects SONATA BIS	**7**
Projects SONATINA	**1**
Projects QuantERA	**2**
Projects HARMONIA	**2**
Projects MAESTRO	**3**
Projects FUGA	**1**
Projects ETIUDA	**3**
Projects MINIATURA	**6**
Projects POLONEZ	**2**
Projects JPND	**1**
Projects PBS	**1**
Projects ORQUID	**1**
Projects TECHMATSTRATEG	**3**
Projects FNP	**3**
Projects KE	**2**
Projects MNiSW	**4**
Stipends MNiSW	**4**
Projects DESY	**1**
Projects Simons	**1**

Patents

Patents obtained in 2018:

1.Patent granted 31.05.2018 (EPO); 21.03.2018 (USA)
Publication no.USA: US2018151770 (A1)
Publication no: WO 2016/182465 A1 Publication no EPO: EP3295490 A1
Photovoltaic cell structure and method to produce the same
Sylwia Gierałtowska, Marek Godlewski, Rafał Pietruszka, Łukasz Wachnicki, Bartłomiej Witkowski

2. **Patent granted** 29.06.2018
Polish Patent Office No. 229128
Struktura ogniwa fotowoltaicznego oraz sposób wykonania struktury ogniwa fotowoltaicznego
Sylwia Gierałtowska, Marek Godlewski, Rafał Pietruszka, Łukasz Wachnicki, Bartłomiej Witkowski

3. **Patent granted** 31.01.2018
Polish Patent Office No. 227759
Struktura przezroczystego detektora nadfioletu oraz sposób wytwarzania struktury przezroczystego detektora nadfioletu
Marek Guziewicz, Wojciech Jung, Elżbieta Guziewicz, Ewa Przeździecka, Ramon Schifano, Tomasz Krajewski

4. **Patent granted** 11.07.2018
Polish Patent Office No. 231182
Sposób pomiaru temperatury nierównowagowych procesów termicznych oraz układ do stosowania tego sposobu
Maciej Zgirski, Marek Foltyn

5. **Patent granted** 31.10.2018
Polish Patent Office No. 230374
Sposób otrzymywania heterodimeru kropek kwantowych
A.Dąbrowski, A. Drzymała, J. Grzyb, R. Worch

6. **Patent granted** 31.10.2018
Polish Patent Office No. 230375
Sposób otrzymywania heterodimeru kropek kwantowych
A. Dąbrowski, A. Drzymała, J. Grzyb, R. Worch

7. **Patent granted** 29.06.2018
Polish Patent Office No. 229260
Struktura półprzewodnikowa nanodrutów azotku galu z zagrzebanym kontaktem elektrycznym oraz sposób wykonania tej struktury
Marta Sobańska, Giorgi Tchutchulashvili, Kamil Kłosek, Zbigniew Żytkiewicz, Krystyna Gołaszewska, Renata Kruszka

+ 5 applications submitted in 2018 (including one European)

Employees' statements: Branch / discipline

Collected to 30.11.2018

Single discipline (236 persons):	jobs
Science („nauki ścisłe i przyrodnicze")/**physics**:	213.5
Science/**chemistry**:	1.0

Two disciplines (34 persons):	jobs
Science/physics 75% / chemistry 25%	16.0
Science/chemistry 75% / physics 25%	1.0
Science / physics 75% / biology 25%	5.5
Science /physics 75% **Engineering and technical studies** /material engineering 25% („nauki inżynieryjne i techniczne")	8.0
Engineering and technical studies /material engineering 75% **Science** /physics 25%	0.5
Science /physics 75% **Engineering and technical studies** /biomedical engineering 25%	1.0

Employees' statements: attribution of research activity to IF PAN („liczba N")

Collected to 31.12.2018

The statements were submitted by 217 persons (201.8 jobs)

5 persons refused to submit (+2 on unpaid leaves till 2020)

Nanoscale

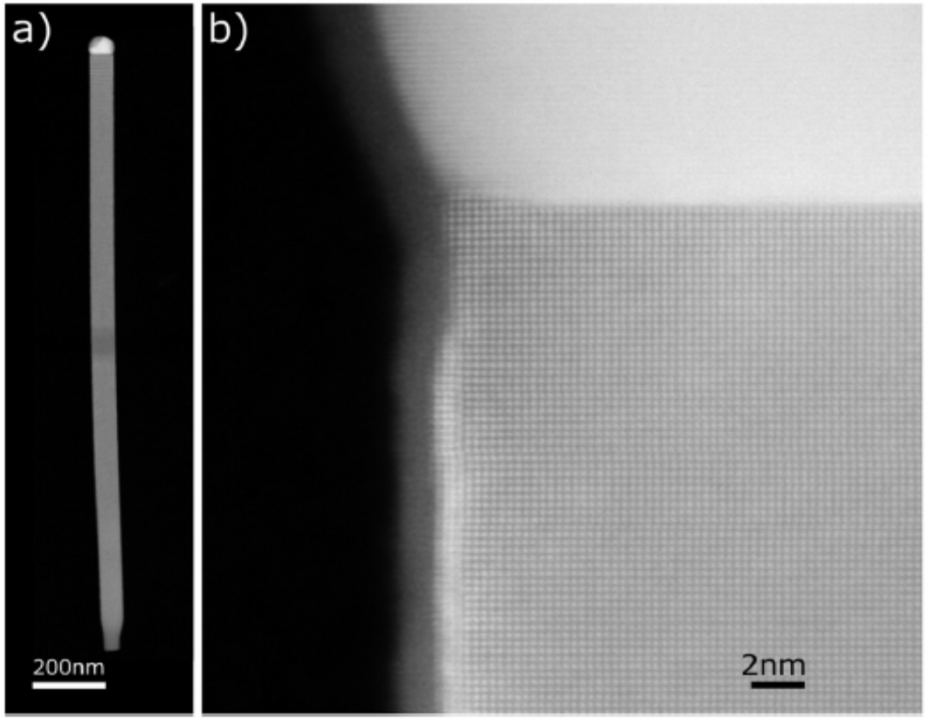
PAPER

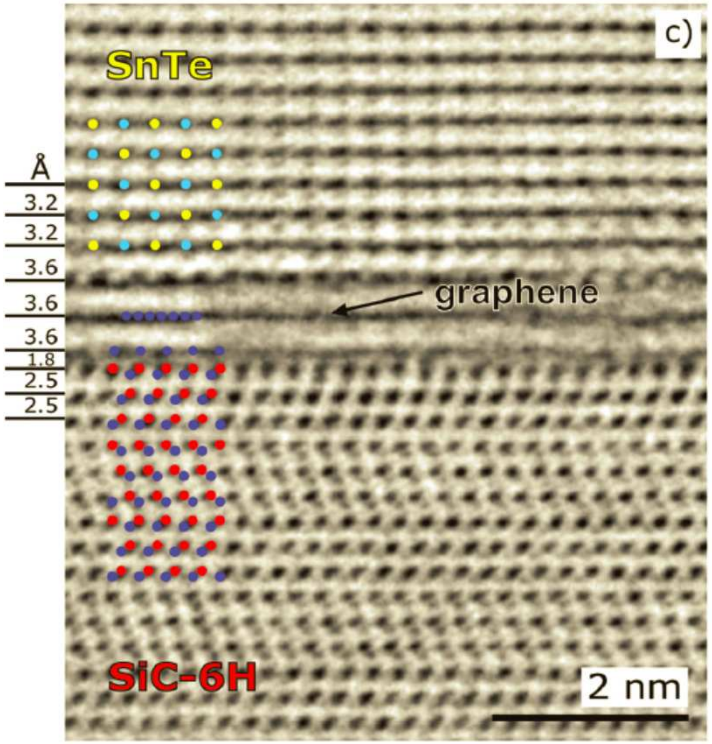
Check for updates

Cite this: *Nanoscale*, 2018, **10**, 20772

Defect-free SnTe topological crystalline insulator nanowires grown by molecular beam epitaxy on graphene

Janusz Sadowski, *[a,b,c] Piotr Dziawa,[a] Anna Kaleta,[a] Bogusława Kurowska,[a] Anna Reszka,[a] Tomasz Story[a] and Sławomir Kret*[a]



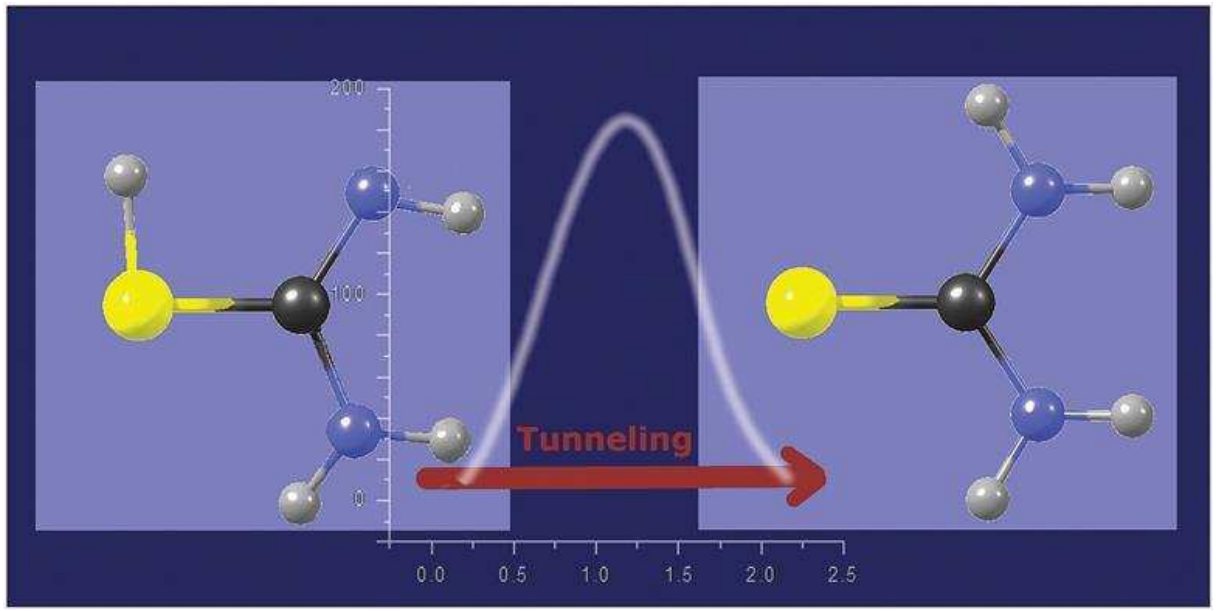


Hydrogen-atom tunneling through a very high barier; spontaneous thiol → thione conversion of thiourea isolated in low-temperature Ar, Ne, H_2 and D_2 matrices

Hanna Rostkowska, Leszek Łapiński, Maciej J. Nowak,
Phys. Chem. Chem. Phys. **20**, 13994 (2018)

Scientists in Poland have confirmed that spontaneous thiol to thione hydrogen-atom transfer takes place in thiourea isolated in low-temperature matrices. Building on their earlier work on proton tunnelling in thiourea isolated in an argon matrix, Maciej Nowak and colleagues at the Polish Academy of Sciences have now investigated how matrix media and temperature influence the tunnelling rate.

(*Chemistry World*)

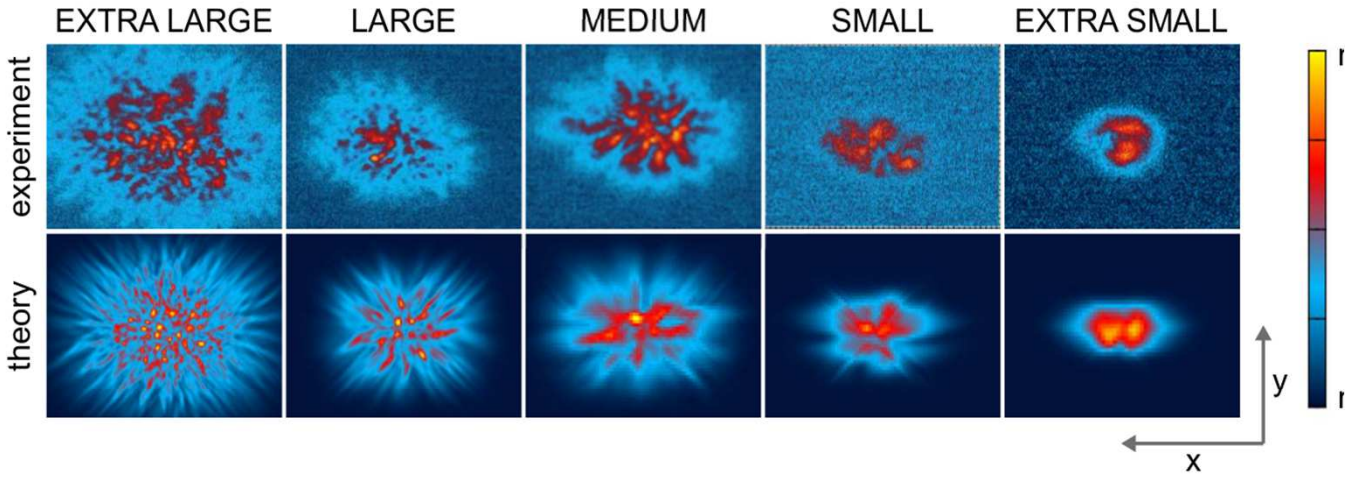


ON 5 DIVISION OF THEORETICAL PHYSICS

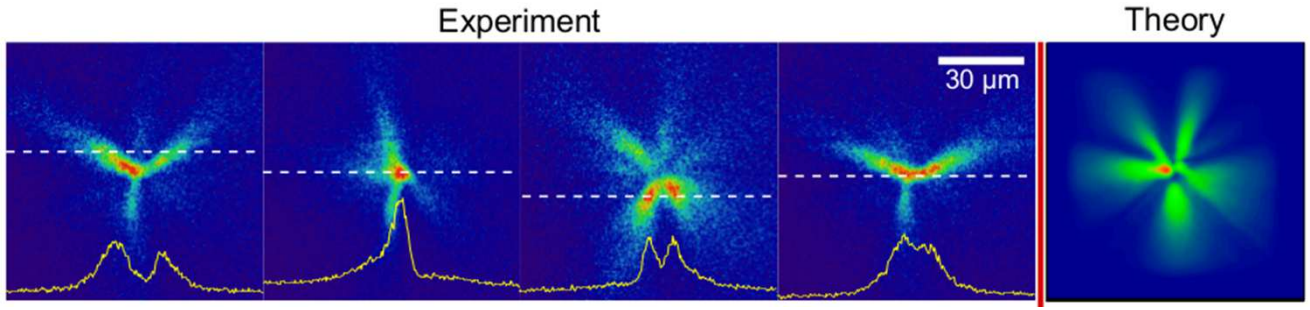
The long-sought dynamical instability of exciton-polariton condensates and hole burning effect were observed, and **described by theoretical models developed in the polariton group at IF PAN**

Experimental data was obtained by two groups:

- Imperial College (S. Kena-Cohen, organic samples, ACS Photonics)
- Australian National University (E. Ostrovskaya, GaAs samples, Nature Communications)



N. Bobrovska et al.,
*ACS Photonics **5**, 111 (2018)*



E. Estrecho et al.,
*Nature Communications **9**, 2944 (2018)*

XXII Warsaw Science Festival at Institute of Physics PAN
29.09.2018

REPORTING SESSION

Institute of Physics
Polish Academy of Sciences
Research Activity in 2018
SUMMARY

SESJA SPRAWOZDAWCZA

*Działalność Naukowa Instytutu Fizyki PAN w roku **2018** Podsumowanie*

Employees' statements: assignement of research activity to IF PAN („liczba N")

Collected to 31.12.2018

The statements were submitted by 249 persons
5 persons refused to submit

	jobs
TOGETHER	**201.8**
In disciplines:	
Physics	193.0
Chemistry	5.5
Biology	1.2
Material engineering	1.9
Biomedical engineering	0.2