



Fakulteta za  
naravoslovje in  
matematiko

# VSEBINA

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# UVODNA BESEDA DEKANA

Delo in rezultati programske skupine Računsko intenzivni kompleksni sistemi, ki pod vodstvom prof. dr. Matjaža Perca deluje na Fakulteti za naravoslovje in matematiko (FNM) Univerze v Mariboru v sodelovanju s kolegi iz Fakultete za kemijo in kemijsko tehnologijo, so v drugem letu delovanja več kot upravičili razloge za njeno ustanovitev. Deluje v skladu z naravnostjo in vrednotami matične fakultete, na kateri si nenehno prizadevamo, da smo po čim večjem številu kriterijev v samem vrhu ali kar najboljši. Programska skupina je glede na financiranje relativno druga najboljša (število FTE) izmed vseh programskih skupin. Veseli nas, da s tem pomembno prispevamo tudi k raziskovalni odličnosti Univerze v Mariboru in širše regije. Raziskovalcem na FNM tako še naprej uspeva ustvarjati največjo dodano vrednost, torej največ rezultatov glede na vložena javna sredstva.

Samostojna programska skupina nam zagotavlja sistemsko financiranje raziskovalne dejavnosti, kar bo odpravilo enega največjih dosedanjih očitkov ob akreditacijah s strani NAKVIS, ki jo pričakujemo že naslednje leto. Na osnovi lastne programske skupine smo bili tudi uspešni pri kandidaturi na razpisu za mlade raziskovalce. Pri tem ne gre zgolj za dodatne raziskovalce, ampak tudi za prispevek h krepiti ustvarjalnosti in kreativnosti med mladimi v tem okolju. Nedvomno se vsak tak prispevek prej ali slej zrcali tudi pri gospodarski rasti in bolj uravnovešenem splošnem razvoju naše regije.

Raziskovanje članic in članov ob že omenjeni raziskovalni odličnosti zaznamuje tudi aktualnost in odzivnost na razmere v družbi, saj se je ena skupina raziskovalcev takoj vključila v raziskovanje širjenja epidemije. Pri tem je treba poudariti, da so te raziskave potekale brez dodatnega financiranja, ampak iz notranjega vzgiba, da vsak pomaga in prispeva po svojih močeh. Delo je kmalu bilo tudi mednarodno prepoznano, učinkovita komunikacija s širšo javnostjo pa je ustvarjala tako splošno klimo, zaradi katere smo epidemijo zajezili med prvimi in z relativno malo žrtvami. Kar nekaj članov programske skupine pa je bilo aktivnih tudi pri drugem prostovoljnem projektu FNM »razlagamo.si«. Oboji si za svoj prostovoljni prispevek zaslužijo iskrene čestitke in zahvalo. Pričujoča publikacija lepo kaže na izjemno motiviranost in impulz, ki ga je programska skupina podelila članicam in članom. Matjažu se lepo zahvaljujem za vodenje in podporo, s katero krepi pripadnost h kolektivu, kar zagotavlja največje sinergijske učinke. Hvaležnost izražamo tudi vsem, ki ste nam zaupali ob ustanavljanju programske skupine in nam še naprej pomagate pri delu. Tudi zaradi tega lahko izkazujemo nenehno rast.

**.Dekan Fakultete za naravoslovje in matematiko**

**Mitja Slavinec**

# UVODNA BESEDA VODJE PROGRAMSKE SKUPINE

Na Fakulteti za naravoslovje in matematiko je januarja 2019 začela teči naša prva matična programska skupina z naslovom Računsko intenzivni kompleksni sistemi. Cilj slednje je združiti znanja s področja fizike, biologije, matematike in računalništva v inovativnem raziskovalnem delu, katerega cilj je postaviti Slovenijo v svetovni vrh raziskav na področju kompleksnih sistemov. Poudarke je na razvoju algebraičnih, kombinatoričnih in topoloških metod, na študiju sodelovanja v človeških in živalskih družbah ter na študiju tekmovanja zaradi omejenih virov in pretočnosti vrst, na prostorsko-časovne interakcije v rastlinskih združbah, ter na vedenjske in družbene spremembe zaradi klimatskih sprememb. Navedene tematike predstavljajo temeljne izzive, ki segajo od ublažitve socialnih kriz in konfliktov do ohranjanja naravnih virov in biotske raznovrstnosti, s katerimi se bodo srečevale prihodnje generacije. Skupni imenovalec vseh je teorija kompleksnih sistemov, ki so sestavljeni iz velikega števila relativno enostavnih enot. Primeri kompleksnih sistemov, ki jih vsi dobro poznamo, so možgani, mravljišča, ptičji in čebelji roji, ter družbena omrežja. Presenetljivo pri vseh je zelo kompleksno kolektivno obnašanje in kolektivni pojavi, ki jih nikdar ne bi pričakovali na podlagi osnovnih enot. Od tod tudi izvor imena »kompleksni sistemi«.

Za nami je prvo leto intenzivnega raziskovalnega dela, in s ponosom lahko ugotovimo, da smo objavili že 61 izvirnih znanstvenih člankov, od tega kar 30 v prvi četrtnini, 6 v A" in 34 v A'. Gre torej za vrhunske objave, kar potrjujejo tudi številna vabljena predavanja na konferencah po vsem svetu, kakor tudi zaupanje širše raziskovalne skupnosti članom programske skupine z uredniškim delom v najboljših fizikalnih in interdisciplinarnih raziskovalnih periodikah. Tudi citati so impresivni. Namreč, več kot 21000 čistih citatov so zbrali člani programske skupine v zadnjih 10-ih letih. Naš h-indeks je 77.

Poleg izjemnega raziskovalnega dela smo objavili tudi tri pregledne znanstvene članke, številne strokovne članke, poglavja v monografijah, spremne besede, in seveda povzetke za domače in tuje konference. V celoti gledano torej skrbimo tako za raziskovanje in za ustvarjanje novih znanj, kakor tudi za širjenje in podajanje teh znanj drugim raziskovalcem, stroki, in širši javnosti.

Prepričani smo, da je odlično prvo leto samo uvod v še boljše nadaljevanje dela v naši programski skupini, o čemer bomo vselej z veseljem poročali v letnem zborniku, katerega prvi izvod sledi na naslednjih straneh.

**Vodja programske skupine**  
**Matjaž Perc**

# PROGRAM P1-0403

## - RAČUNSKO INTENZIVNI KOMPLEKSNI SISTEMI

Vodja programa: red. prof. dr. Matjaž Perc

Raziskovalna / Razvojna dejavnost: Naravoslovje / Matematika /  
Numerična in računalniška matematika

Kategorizacija po metodologiji ARRS - naravoslovje (2019):

Kvalitativne ocene		
A1 - objave	Točke	Ocena
Upoštevane točke	2672.72	4.00
A" - izjemni dosežki	362.61	0.24
A' - zelo kvalitetni dosežki	1405.68	0.94
A1/2 - pomembni dosežki	1849.72	1.00
Ocena A1	<b>6.18</b>	
Citiranost	Podatki	
CI10 - število čistih citatov znanstvenih del v zadnjih 10 letih (2009-2019)	21158	
Clmax - najodmevnnejše delo v zadnjih 10 letih (2009-2019)	1037	
h-indeks v zadnjih 10 letih (2009-2019)	77	
A3 - sredstva izven ARRS (za obdobje 2013-2017)	Ocena	
A32 - sredstva po pogodbah z gospodarstvom	0.14	
A31 - sredstva mednarodnih projektov	0.04	
A33 - sredstva drugih ministrstev	0.41	
A34 - druga sredstva	0	
A35 - druga gospodarska sredstva	0	
<b>Ocena A3</b>	<b>0.59</b>	

Kategorizacija po metodologiji ARRS - naravoslovje (2020):

Kvalitativne ocene		
A1 - objave	Točke	Ocena
Upoštevane točke	2528.50	4.00
A'' - izjemni dosežki	399.09	0.27
A' - zelo kvalitetni dosežki	1179.77	0.79
A1/2 - pomembni dosežki	1828.45	1.00
Ocena A1		<b>6.06</b>
Citiranost	Podatki	
CI10 - število čistih citatov znanstvenih del v zadnjih 10 letih (2010-2020)	24605	
Clmax - najodmevnnejše delo v zadnjih 10 letih (2010-2020)	1134	
h-indeks v zadnjih 10 letih (2010-2020)	83	

Kategorizacija po metodologiji ARRS - naravoslovje (2019, 2020):

Kvalitativne ocene		
A1 - objave	Točke	Ocena
Upoštevane točke	5517.54	4.00
A'' - izjemni dosežki	917.90	0.61
A' - zelo kvalitetni dosežki	2673.55	1.00
A1/2 - pomembni dosežki	3730.10	1.00
Ocena A1		<b>6.61</b>
Citiranost	Podatki	
CI10 - število čistih citatov znanstvenih del v zadnjih 10 letih (2010-2020)	24605	
Clmax - najodmevnnejše delo v zadnjih 10 letih (2010-2020)	1134	
h-indeks v zadnjih 10 letih (2010-2020)	83	

# ČLANI PROGRAMSKE SKUPINE



doc. dr. MATEVŽ ČREP NJAK

raziskovalno področje: Matematika / Topologija

<https://scholar.google.com/citations?user=VfAOOhjYAAAAJ>



red. prof. dr. DUŠAN DEVETAK

raziskovalno področje: Biologija / Zoologija in zoofiziologija

<https://scholar.google.com/citations?user=5tiXHoYAAAAJ>



doc. dr. BRINA DOJER

raziskovalno področje: Kemija

<https://scholar.google.com/citations?user=N-RUp1QAAAAJ>



asist. MAJA DUH  
raziskovalno področje: Fizika  
<https://scholar.google.com/citations?user=LMOdz7IAAAJ>



asist. JASMINA FERME  
raziskovalno področje: Matematika / Teorija grafov  
<https://scholar.google.com/citations?user=ISIXwf0AAAAJ>



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doc. dr. BOJAN HVALA  
raziskovalno področje: Matematika / Algebra  
<https://scholar.google.com/citations?user=gh9tmyYAAAAJ>



doc. dr. DANIJEL IVAJNŠIČ  
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doc. dr. VESNA KLOKOČOVNIK

raziskovalno področje: Biologija

<https://scholar.google.com/citations?user=aPuDdx8AAAAJ>



red. prof. dr. MATJAŽ PERC

raziskovalno področje: Fizika / Teoretična fizika

<https://scholar.google.com/citations?user=nfY5WDMAAAJ>



doc. dr. IGOR PESEK

raziskovalno področje: Računalništvo in informatika  
/ Inteligentni sistemi - programska oprema  
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doc. dr. NATAŠA PIPENBAHER

raziskovalno področje: Biologija

<https://scholar.google.com/citations?user=HM4D-z0AAAAJ>



izr. prof. dr. MATEJA PLOJ VRTIČ

raziskovalno področje: Vzgoja in izobraževanje

<https://scholar.google.com/citations?user=sDwBS0UAAAAJ>



izr. prof. dr. ROBERT REPNIK

raziskovalno področje: Fizika / Fizika kondenzirane materije

<https://scholar.google.com/citations?user=5EvYFlcAAAAJ>



strok. sodel. MARTIN ROZMAN

raziskovalno področje: Kemija / Fizikalna kemija



izr. prof. dr. MITJA SLAVINEC

raziskovalno področje: Fizika / Fizika kondenzirane materije



izr. prof. dr. NINA ŠAJNA  
raziskovalno področje: Biologija / Botanika  
[https://scholar.google.com/citations?user=\\_PsQRvcAAAAJ](https://scholar.google.com/citations?user=_PsQRvcAAAAJ)



izr. prof. dr. SONJA ŠKORNIK  
raziskovalno področje: Biologija / Botanika  
<https://scholar.google.com/citations?user=FWG4Mq0AAAAJ>



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raziskovalno področje: Matematika / Teorija grafov  
<https://scholar.google.com/citations?user=cSlpproAAAAJ>

# PUBLIKACIJE

## Število posameznih publikacij:

Izvirni znanstveni članek: 129

Pregledni znanstveni članek: 5

Strokovni članek: 14

Poljudni članek: 6

Poleg zgoraj naštetega so člani programske skupine objavili še: objavljeni strokovni prispevek na konferenci (vabljeno predavanje), 10 objavljenih znanstvenih prispevkov na konferenci, 4 objavljene povzetke znanstvenih prispevkov na konferenci (vabljeno predavanje), 42 objavljenih povzetkov znanstvenega prispevka na konferenci, 5 objavljenih povzetkov strokovnih prispevkov na konferenci, 11 samostojnih znanstvenih sestavkov ali poglavij v monografski publikaciji, 12 samostojnih strokovnih sestavkov ali poglavij v monografski publikaciji, znanstveno monografijo, učna gradiva in številna druga dela.

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2019-09-18 Častni član Ameriškega fizikalnega združenja

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