



UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Izbrana poglavja iz astrofizike in astrofizike osnovnih delcev
Course name:	Selected topics from astrophysics and atroparticle physics

Študijski program in stopnja Study program and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Fizika in Astrofizika II. stopnja	Astrofizika	2	/
Physics and Astrophysics II. level	Astrophysics	2	/

Vrsta predmeta / Course type	obvezni / mandatory
Univerzitetna koda predmeta / University course code:	2FAF08

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Lab. work	Teren. vaje Field work	Samost. delo Indiv. work	ECTS
30	30	/	/	/	120	6

Nosilec predmeta / Lecturer:	prof. dr. Danilo Zavrtanik	
Jeziki / Languages:	Predavanja / Lectures:	slovenščina / English
	Vaje / Tutorial:	slovenščina / English

Pogoji za opravljanje študijskih obveznosti: Prerequisites:

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Vsebina:	Syllabus outline:
Izbrane znanstveno-raziskovalne teme, ki so v tistem trenutku najbolj aktualne na področju astrofizike in astrofizike osnovnih delcev. Podajali jih bodo domači in vabljeni vodilni strokovnjaki z izbranih področij.	Selected scientific and research topics that are topical in the astrophysics and astroparticle physics at a given moment. Topics will be presented by both local and invited leading experts from their respective fields.

Temeljni literatura in viri / Basic readings:

Po dogovoru z nosilcem predavanj in vabljenimi predavatelji, glede teme predavateljev.
To be defined in agreement with the course principal and the lecturers; related to topics presented by the lecturers.

Cilji in kompetence:	Objectives and competences:
Cilj predmeta je študente soočiti z izbranimi znanstveno-raziskovalnimi temami, ki so v tistem trenutku najbolj aktualne, in ki jim jih	The objective of the course is to face students with selected scientific and research topics that are topical at a given moment and that will be



<p>bodo podali povabljeni vodilni strokovnjaki na svojem področju.</p> <p>Študenti bodo dobili celo paleto specializiranih znanj s precej ozko usmerjenih področij, ki pa jih bodo s pomočjo nosilca predmeta združili v izboljšano in poglobljeno razumevanje problematike astrofizike in astrofizike osnovnih delcev. Pridobljeno znanje o sintezi ekspertnih znanj lahko študenti uporabijo na vseh področjih znanosti, poglobljeno znanje s področja astrofizike in astrofizike osnovnih delcev pa lahko uporabijo za nadaljevanje študija na III. stopnji. Z obvladovanjem tega področja bodo študenti dobili vpogled v najnovejše raziskave na predstavljenih področjih. Obvladovanje sinteze specializiranih znanj je primerno za delo na kateremkoli raziskovalnem področju.</p>	<p>presented to them by invited leading experts from their respective fields.</p> <p>Students will acquire specialized knowledge from very specific fields of science. With the help of their course lecturer, they will transform this knowledge into an improved and in-depth understanding of astrophysics and astroparticle physics. Students can apply the obtained understanding of the synthesis of expert knowledge in all fields of science, while their in-depth knowledge of astrophysics and astroparticle physics can be used to continue their studies at the third level. Through the understanding of this field, students will gain insight into the latest research results in the field. The synthesis of specialized knowledge provides students the flexibility to work in various research fields.</p>
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Predvideni študijski rezultati:	Intended learning outcomes:
<p>Študenti bodo spoznali:</p> <ul style="list-style-type: none"> - sodobne probleme v astrofiziki in astrofiziki osnovnih delcev; - eksperimente, kjer se reševanja odprtih vprašanj lotevajo; - koncepte uporabljenih eksperimentalnih metod. 	<p>Students will learn:</p> <ul style="list-style-type: none"> - present open problems of astrophysics and astroparticle physics; - experimental facilities, dealing with these problems; - concepts of experimental approaches used to solve them.

Metode poučevanja in učenja:	Learning and teaching methods:
- predavanja	- lectures

Načini ocenjevanja:	Utež / Weight (%)	Assessment:
- ustni izpit	100	- oral exam

Reference nosilca / references of the course principal:
<p>Prof. dr. Danilo Zavrtnik je redni profesor za področje fizike na Univerzi v Novi Gorici. Danilo Zavrtnik is full professor of physics at the University of Nova Gorica.</p> <p>1. ALEPH Collaboration, DELPHI Collaboration, L3 Collaboration, OPAL Collaboration, The LEP Working Group for Higgs Boson Searches, BARATE, R., BRAČKO, Marko, GOLOB,</p>



Boštjan, KERNEL, Gabrijel, KERŠEVAN, Borut Paul, PODOBNIK, Tomaž, ZAVRTANIK, Danilo, et al. Search for the Standard Model Higgs boson at LEP. Physics letters. Section B, ISSN 0370-2693. [Print ed.], 2003, vol. 565, str. 61-75. [COBISS.SI-ID [277243](#)]

2. The ALEPH Collaboration, The DELPHI Collaboration, The L3 Collaboration, The OPAL Collaboration, The SLD Collaboration, The LEP Electroweak Working Group, The SLD Electroweak and Heavy Flavour Groups, SCHAEEL, S., BRAČKO, Marko, ERŽEN, Borut, GOLOB, Boštjan, KERNEL, Gabrijel, KERŠEVAN, Borut Paul, KRIŽNIČ, Ervin, PAUL, Thomas, PODOBNIK, Tomaž, STANIČ, Samo, ZAVRTANIK, Danilo, et al. Precision electroweak measurements on the Z resonance. Physics reports, ISSN 0370-1573. [Print ed.], 2006, vol. 427, no. 5/6, str. 257-454. [COBISS.SI-ID [563451](#)]

3. AUGER Collaboration, ABRAHAM, J., CREUSOT, Alexandre, FILIPČIČ, Andrej, HUSSAIN, Mustafa, PAUL, Thomas, VEBERIČ, Darko, VOROBIOV, Serguei, ZAVRTANIK, Danilo, ZAVRTANIK, Marko, et al. Observation of the suppression of the flux of cosmic rays above 4×10^{19} eV. Physical review letters, ISSN 0031-9007. [Print ed.], avg. 2008, vol. 101, no. 6, str. 061101-1-061101-7. [COBISS.SI-ID [926459](#)]

4. AUGER Collaboration, ABRAHAM, J., CREUSOT, Alexandre, FERRY, Sophie, FILIPČIČ, Andrej, HORVAT, Matej, PAUL, Thomas, VEBERIČ, Darko, VOROBIOV, Serguei, ZAVRTANIK, Danilo, ZAVRTANIK, Marko, et al. Correlation of the highest-energy cosmic rays with nearby extragalactic objects. Science, ISSN 0036-8075, 9. nov. 2007, let. 318, str. 938-943. [COBISS.SI-ID [775419](#)]

5. CPLEAR Collaboration, ANGELOPOULOS, A., FILIPČIČ, Andrej, MANDIĆ, Igor, MIKUŽ, Marko, ZAVRTANIK, Danilo, et al. First direct observation of time-reversal non-invariance in the neutral-kaon system. Physics letters. Section B, ISSN 0370-2693. [Print ed.], 1998, vol. 444, str. 43-51. [COBISS.SI-ID [35067](#)]