DOCTORAL STUDIES COURSE UNIT DESCRIPTION

<table>
<thead>
<tr>
<th>Subject</th>
<th>Scientific Field</th>
<th>Faculty</th>
<th>Center/Institute/ Department</th>
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</thead>
<tbody>
<tr>
<td><strong>Random processes</strong></td>
<td>Physics N 002</td>
<td>Faculty of physics</td>
<td>Institute of Theoretical Physics and Astronomy</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Student’s workload</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Lectures</td>
<td>1,5</td>
<td>Consultations</td>
<td>1,5</td>
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<tr>
<td>Independent study</td>
<td>3</td>
<td>Seminars</td>
<td>3</td>
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Course annotation


**Shapes of spectral lines.** Natural line width. Doppler broadening. Impact and statistical line broadening.

**Fourier analysis.** Power spectral density. Relaxation time and its reveals in correlations and power spectra. Wavelet method.

**Point processes.** Examples and generalizations. Theory and models of point processes.

**Stochastic integrals.** Definitions. Examples. Ito stochastic integral. Stratonovich integral.


List of literature


<table>
<thead>
<tr>
<th>Consulting teachers</th>
<th>Scientific degree</th>
<th>Pedagogical name</th>
<th>Main scientific works published in a scientific field in last 5 year period</th>
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</table>
6. Ruseckas J. and Kaulakys B. |

Certified during Doctoral Committee session 21/02/2017, protocol No. 108

Committee Chairman prof. S. Juršėnas