

# ECT\* Workshop: New Observables in Quarkonium Production

Sunday 28 February 2016 - Friday 04 March 2016

## Timetable

### Sunday 28 February 2016

**Welcome reception pizzeria dinner downtown - (20:00-22:00)**

### Monday 29 February 2016

#### **Quarkonium production and QCD: 3 talks + 45 min. discussion - (29 February 09:00-10:45)**

time title	presenter
09:00 Understanding the theory of quarkonium production in QCD: where do we stand ? (00h20')	QIU, Jianwei (Brookhaven National Lab)
09:20 $\eta(c,b)$ , $\chi(c,b)$ , $h(c,b)$ , $X(3872)$ ; what can they tell us ? (00h20')	SHAO, Huasheng (CERN)
09:40 Polarisation: a smoking gun ? (00h20')	
10:00 Q&A + round table (45 min.) (00h45')	

#### **Coffee break - (10:45-11:15)**

#### **TMD factorisation, hadron-hadron collisions and quarkonium production: 3 talks + 45 min. discussion - (29 February 11:15-13:00)**

time title	presenter
11:15 TMDs: why and what for ? (00h20')	SCHLEGEL, Marc (University of Tuebingen)
11:35 TMD factorisation: broken or not broken ? (00h20')	QIU, Jianwei (Brookhaven National Lab)

11:55 Wilson lines for Dummies (00h20')	CHEREDNIKOV, Igor (University of Antwerp)
12:15 Q&A + round table (45 min.) (00h45')	

#### **Lunch at ECT\* - (13:00-14:00)**

#### **Quarkonium studies in pp collisions: (un)polarised beams and (un)polarised quarkonia: 3 talks + 45 min. discussion - (29 February 14:00-15:45)**

time title	presenter
14:00 LHC and Tevatron highlights (Cross section, polarisation) (00h20')	KARTVELISHVILI, Vato (Lancaster University (GB))
14:20 RHIC and Fermilab highlights (Cross section, Polarisation, SSA) (00h20')	TRZECIAK, Barbara Antonina (Utrecht University)
14:40 $\eta(c)$ , $\chi(c)$ and $\chi(b)$ from SPS to LHC (SPS, Hera-b, RHIC, Tevatron, LHC) (00h20')	KRATSCHEMER, Ise (Austrian Academy of Sciences (AT))
15:00 Q&A + round table (45 min.) (00h45')	

#### **Coffee break - (15:45-16:15)**

#### **Quarkonia in nucleus-nucleus collisions: 4 talks + 1h30 discussion - (29 February 16:15-19:00)**

time title	presenter
16:15 Theory aspects of quarkonium production in heavy ion collisions, where do we stand ? (00h20')	PETRECZKY, Peter (BNL)
16:35 Regeneration and coalescence of charm and beauty (00h20')	ZHOU, Kai (ITP, Goethe-University Frankfurt am Main) ZHUANG, Pengfei (Tsinghua University)
16:55 Quarkonia and a realistic medium (00h20')	GOSSIAUX, Pol (Subatech)
17:15 NRQCD in Hot Nuclear matter (00h20')	VAIRO, Antonio (TU Munich)
17:35 Q&A / 1h+ discussion (01h25')	

#### **Reception at ECT\* - (19:00-20:30)**

### Tuesday 01 March 2016

#### **Quarkonia and normal nuclear matter: 3 talks + 45 min. discussion - (01 March 09:00-10:45)**

time title	presenter
09:00 Quarkonium and CGC: NRQCD vs CEM vs CSM (00h20')	WATANABE, Kazuhiro (Central China Normal University)
09:20 Quarkonium production in pA collisions: Energy loss, Cronin effect, Shadowing and all that (00h20')	DUCLoue, Bertrand (University of Jyväskylä)
09:40 Gluon TMDs at small x (pp and pA cases) (00h20')	BOER, Daniel (University of Groningen)
10:00 Q&A + round table (45 min.) (00h45')	

#### **Coffee Break - (10:45-11:15)**

#### **"Ground state" experimental studies in proton-nucleus and nucleus-nucleus collisions: 3 talks + 45 min. discussion - (01 March 11:15-13:00)**

time title	presenter
11:15 J/psi production in proton-nucleus collisions from SPS to LHC (00h20')	ARNALDI, Roberta (Universita e INFN Torino (IT))

11:35 J/psi production in nucleus-nucleus collisions from SPS to LHC (00h20')	ARSENE, Ionut Cristian (University of Oslo (NO))
11:55 Upsilon production in pA and AA collisions from SPS to the LHC (00h20')	CALDERON DE LA BARCA SANCHEZ, Manuel (University of California Davis (US))
12:15 Q&A + round table (45 min.) (00h45')	

#### **Lunch at ECT\* - (13:00-14:00)**

#### **Discussion session: describing data from low to high energies: (1) pp data; (2) pA data; (3) AA data - (01 March 14:00-15:45)**

#### **Coffee break - (15:45-16:15)**

#### **Double parton scatterings and quarkonia - (01 March 16:15-18:50)**

time title	presenter
16:15 Elements of Theory of DPS: what to expect or not (00h20')	KASEMETS, Tomas (Nikhef/VU)
16:35 Observation of DPS in Quarkonium + vector bosons (00h20')	PRICE, Darren (University of Manchester (GB))
16:55 Double HF production (J/psi+charm, Upsilon+charm): exp. vs. theory (00h20')	LI, Yiming (Laboratoire de l'Accelérateur Lineaire (FR))

17:15 Q&A + round table (45 min.) (00h55')	D'ENTERRIA, David (CERN)
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#### **Dinner at Hotel America - (20:00-21:30)**

### Wednesday 02 March 2016

#### **Associated-quarkonium production: 3 talks + 45 min. discussion - (02 March 09:00-10:25)**

time title	presenter
09:00 Quarkonium-pair production at the SPS, the Tevatron and the LHC (00h20')	KAMIN, Jason Adrian (University of Illinois at Chicago (US))
09:20 Quarkonium-pair production : QCD corrections and DPS (00h20')	SHAO, Huasheng (CERN)
09:40 Q&A + round table (45 min.) (00h45')	

#### **Coffee break - (10:25-10:55)**

#### **quarkonia and kT inside the proton: 3 talks + 45 min. discussion - (02 March 10:55-12:40)**

time title	presenter
10:55 The linearly polarised gluon: spin physics without polarised nucleons but with quarkonia (00h20')	PISANO, Cristian (Pavia U.)
11:15 Double J/psi production in the TMD limit (00h20')	SCARPA, Florent (IPN Orsay & Groningen U.)
11:35 A quarkonium, a jet and a rapidity gap: a new probe of the COM ? (00h20')	BOUSSARIE, Renaud (LPT Orsay)

11:55	Q&A + round table (45 min.) (00h45')	
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### Lunch at ECT\* - (12:40-13:40)

**Discussion on the implication of color octet mechanism: propagation in matter, TMD factorisation and NRQCD fits - (02 March 13:40-15:45)**

### Coffee break - (15:45-16:15)

**DPS in pA and AA collisions & new ideas in pp collisions from an HIC viewpoint: 4 talks + 60 min. discussion - (02 March 16:15-18:35)**

time	title	presenter
16:15	DPS contribution to quarkonium production in pA and AA collisions: a new scaling ? (00h20')	D'ENTERRIA, David (CERN)
16:35	Feasibility studies for quarkonium associated production in AA collisions (00h20')	HADJIDAKIS, Cynthia (Universite de Paris-Sud 11 (FR))
16:55	Progress in Monte Carlo: Quarkonium production, Hadronisation and MPI in Pythia & EPOS (00h20')	PORTEBOEUF, Sarah (Univ. Blaise Pascal Clermont-Fc. II (FR))

17:15	Quarkonium-hadron correlation and quarkonium production vs. centrality in pp collisions (00h20')	KIKOLA, Daniel (Warsaw University of Technology)
17:35	Q&A + round table (60 min.) (01h00')	

### Dinner at Baracca (near ECT\*) - (19:30-21:00)

## Thursday 03 March 2016

**The gluon Sivers effect and the quarkonia: 3 talks + 45 min. discussion - (03 March 09:00-10:45)**

time	title	presenter
09:00	Definition and constraints on the gluon Sivers function (00h20')	MURGIA, Francesco (INFN - Sezione di Cagliari)
09:20	SSA : TMD vs collinear twist-3 vs GPM (00h20')	ANSELMINO, Mauro (Torino U.)
09:40	Quarkonium production in the CGI-GPM model (00h20')	TAELS, Pieter (Antwerp U.)
10:00	Q&A + round table (45 min.) (00h45')	

### Coffee break - (10:45-11:15)

**Quarkonium production in photon-induced/exclusive reactions: 3 talks + 45 min. discussion - (03 March 11:15-13:00)**

time	title	presenter
11:15	Gluon TMD and quarkonium SSA in ep collisions (00h20')	MUKHERJEE, Asmita (IIT Bombay)
11:35	Photon induced charmonium production from ultra- to semi-peripheral nucleus-nucleus collisions (00h20')	MASSACRIER, Laure Marie (Laboratoire de l'Accelérateur Lineaire (FR))

11:55	Exclusive production (Fermilab + LHCb) of $J/\psi$ and double $J/\psi$ (00h20')	SOUZA COVACICH, Daniel (University of Bristol (GB))
12:15	Q&A + round table (45 min.) (00h45')	

### Lunch at ECT\* - (13:00-14:00)

**More on quarkonium and spin: 3 talks + 45 min. discussion - (03 March 14:00-15:10)**

time	title	presenter
14:00	Quarkonium polarisation in nucleus-nucleus collisions from SPS to the LHC (00h20')	SEIXAS, Joao (LIP Laboratório de Instrumentação e Física Experimental de Part)
14:20	COMPASS prospects for quarkonium studies (00h20')	MATOUSEK, Jan (Charles University (CZ))
14:40	Q&A / 30 min. discussion (00h30')	

**Excited quarkonia (exp & th): Excited quarkonia (exp & th) - (03 March 15:10-15:40)**

time	title	presenter
15:10	Excited quarkonia and nuclear matter : pA and AA theories (comovers and QGP effects) (00h20')	GONZALEZ FERREIRO, Elena (Universidad de Santiago de Compostela)

### Coffee break - (15:40-16:10)

**Excited quarkonia (exp & th): 1 talk +2 h round table on excited states and eta(Q): experimental and theoretical aspects - (03 March 16:10-18:30)**

time	title	presenter
16:10	(SKYPE TALK) Excited quarkonia and nuclear matter : pA and AA experiments (SPS, Fermilab, RHIC, LHC) (00h20')	DA SILVA, Cesar Luiz (Los Alamos National Lab)
16:30	<b>2 h round table</b> on excited states+ eta(Q) (02h00')	

### Conference dinner (Orso Grigio)- (20:00-22:00)

## Friday 04 March 2016

**Prospects for RHIC and the LHC: 3 talks + 45 min. discussion - (04 March 09:00-10:45)**

time	title	presenter
09:00	LHC heavy-ion prospects (pA+AA) (00h20')	WINN, Michael Andreas (Ruprecht-Karls-Universitaet Heidelberg (DE))
09:20	RHIC prospects (SPIN+HI) (00h20')	TANG, Zebao (University of Science and Technology of China)
09:40	LHC pp prospects (00h20')	DAHMS, Torsten (Technische Universitaet Muenchen (DE))
10:00	Q&A + round table (45 min.) (00h45')	

### Coffee break - (10:45-11:15)

**Prospects for EIC and AFTER@LHC: 3 talks + 45 min. discussion - (04 March 11:15-12:30)**

time	title	presenter
11:15	EIC, Jlab and the quarkonia (00h20')	MEZIANI, Zein-Eddine (Temple University)
11:35	Heavy-ion and Spin physics with quarkonia at AFTER@LHC and SMOG@LHCb (00h20')	LANSBERG, Jean-Philippe (IPN Orsay, Paris Sud U. / IN2P3-CNRS)
11:55	Q&A + round table (45 min.) (00h35')	

### Lunch at ECT\* - (12:30-13:30)

**Connecting Spin, proton-proton and heavy-ion physics through quarkonium studies: 4 talks + 45 min. discussion - (04 March 13:30-16:00)**

time	title	presenter
13:30	Azimuthal dependence, DPS and proton size effects (00h20')	KASEMETS, Tomas (Nikhef/VU)
13:50	QGP in high-energy proton-nucleus collisions ? (00h20')	ESCOBEDO ESPINOSA, Miguel angel (CNRS)
14:10	Q&A + round table (35 min.) (00h35')	
14:45	Theory wishlist (00h20')	ARLEO, Francois (Laboratoire Leprince-Ringuet)
15:05	Experimental wishlist (00h20')	SCOMPARIN, Enrico (Universita e INFN (IT))
15:25	Final discussion (00h35')	

### Adjourn and coffee break - (16:00-16:30)

**Working session: Quarkonia and AFTER@LHC: 3 small talks + discussion - (04 March 16:30-19:00)**

time	title	presenter
16:30	Simu spin (00h20')	
16:50	Simu pA (00h20')	
17:10	Simu AA (00h20')	

17:30	Q&A Round table (01h30')	
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### Dinner (Pizzeria) - (20:30-22:00)