

### WORKSHOP PROGRAM

#### Day 1 – Wednesday 25 September 2013

**08:00** Registration

**09:00** Welcome by H.Charrue (CSTB)

**09:15** Introduction

#### **09:30** Session 1-1 – Experimental investigation of spalling mechanisms (I) Chairman: Ulrich Diederichs

09:30	<i>Fire spalling of concrete – Part I: A historical overview. (Keynote lecture)</i> Author(s): R. Jansson	01001
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10:00	<i>An experimental investigation into the influence of specimen size, loading conditions, in-situ pore pressures and temperatures on the spalling of large scale concrete walls when exposed to a hydrocarbon fire.</i> Author(s): M. Guerrieri and S. Fragomeni	01002
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10:20	<i>Spalling tests on embedded cores and slabs: a comparative study.</i> Author(s): P. Pimienta, B. Moreau, R. Avenel, P. Peyrac, N. Taillefer, C. Larive, L. D'Aloia and P. Clec'h	01003
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**10:40** Coffee-break

#### **11:00** Session 1-2 – Experimental investigation of spalling mechanisms (II) Chairman: Lars Bostrom

11:00	<i>Thermal stress estimation in relation to spalling of HSC restrained with steel rings at high temperatures.</i> Author(s): T. Tanibe, M. Ozawa, R. Kamata and R. Sato, K. Rokugo	01004
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11:20	<i>Effects of Polypropylene Fibre Type on Occurrence of Heat-Induced Concrete Spalling.</i> Author(s): C. Maluk, L. Bisby and G. Terrasi	01005
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**11:40** Discussion

**11:55** Information point

**12:00** Lunch

#### **14:00** Session 1-3 – Experimental investigation of spalling mechanisms (III) Chairman: Eddy Koenders

14:00	<i>Effect of Load on thermal spalling of reinforced concrete containing various mineral admixtures.</i> Author(s): A. Rahim, U. Kr. Sharma, K. Murugesan and P. Arora	01006
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14:20	<i>Effect of compressive loading on the risk of spalling.</i> Author(s): H. Carré, P. Pimienta, C. La Borderie, F. Pereira and J.-C. Mindeguia	01007
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**14:40** Poster session (see details on page 4)

**15:50** Coffee-break

#### **16:10** Session 1-4 – Moisture, pore pressure and innovative techniques Chairwoman: Izabela Hager

16:10	<i>Fire spalling in concrete – Part II: The moisture effect.</i> Author(s): R. Jansson and L. Boström	03003
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16:30	<i>Concrete Spalling: Interaction between tensile behaviour and pore pressure during heating.</i> Author(s): R. Felicetti and F. Lo Monte	03001
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16:50	<i>Neutron radiography of heated high-performance mortar.</i> Author(s): B. Weber, M. Wyrzykowski, M. Griffa, S. Carl, E. Lehmann and P. Lura	03004
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17:10	<i>Combined NMR moisture, temperature and pressure measurements during heating.</i> Author(s): L. Pel, S. Jaspers, F. Pereira, P. Pimienta and H. Carré	03005
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**17:30** Discussion

**17:45** Closing

### WORKSHOP PROGRAM

#### Day 2 – Thursday 26 September 2013

<b>09:00</b>	<b>Session 2-1 – Moisture, pore pressure and innovative techniques (II)</b> Chairman: Robert Jansson	
09:00	<i>Permeability of concrete under thermal and compressive stress influence: an experimental study.</i> Author(s): H. Lun and R. Lackner	03007
09:20	<i>Measurement systems to detect the time-dependant development of concrete spalling under fire exposure.</i> Author(s): R. Richter, F. Dehn, J. Schmidt, M. Juknat and C.U. Grosse	03006
09:40	<i>Thermal stability of different siliceous and calcareous aggregates subjected to high temperature.</i> Author(s): R. Nirry R. , A-L. Beaucour, R. Hebert, A. Noumowé, B. Ledésert, R. Bodet	07001
10:00	<i>Influence of length and dosage of polypropylene fibres on the spalling tendency and the residual properties of self-compacting concrete after heated at elevated temperatures.</i> Author(s): K. K. Sideris and P. Manita	02004
<b>10:20</b>	<b>Coffee-break</b>	
<b>10:40</b>	<b>Session 2-2 – Measures to reduce or prevent spalling (I)</b> Chairman: Benedikt Weber	
10:40	<i>Microstructural response of polypropylene fibres at high temperature to protect concrete from spalling.</i> Author(s): M. C. Alonso, V. Flor-Laguna and M. Sanchez	02001
11:00	<i>Concrete spalling sensitivity versus microstructure: preliminary results on the effect of polypropylene fibers.</i> Author(s): C. Rossino, F. Lo Monte, S. Cangiano, R. Felicetti and P. G. Gambarova	02002
11:20	<i>The impact of the amount of polypropylene fibres on spalling behaviour and residual mechanical properties of reactive powder concretes.</i> Author(s): I. Hager, T. Zdeb and K. Krzemień	02003
<b>11:40</b>	<b>Discussion</b>	
<b>12:00</b>	<b>Lunch</b>	
<b>14:00</b>	<b>RILEM (P. Pimienta) and fib (E. Klingsch) reports.</b>	
<b>14:30</b>	<b>Session 2-3 – Measures to reduce or prevent spalling (II)</b> Chairwoman: Fabienne Robert	
14:30	<i>Preventive effect on spalling of UFC using jute fiber at high temperature.</i> Author(s): M. Ozawa, Z. Bo, J. Kawaguchi and Y. Uchida	02006
14:50	<i>Improving the behavior of concrete exposed to fire by using an Air Entraining Agent (AEA): Assessment of spalling.</i> Author(s): L. D'Aloia, F. Robert, P. Rougeau, B. Moreau, N. Flahault and C. Collignon	02007
<b>15:10</b>	<b>Coffee-break</b>	
<b>15:30</b>	<b>Session 2-4 – Dedicated to the memory of Prof. Ulrich Schneider</b> <b>Fire safety assessment and repair techniques of spalling damaged concrete structures</b> <b>Spalling assessment for large scale structures</b> Chairman: Frank Dehn	
15:30	<i>Fire Safety assessment and upgrading of existing traffic tunnels. (Keynote lecture)</i> Author(s): U. Diederichs, L. Bodnarova, V. Petranek	06001
16:00	<i>Spalling of concrete: a synthesis of experimental tests on slabs.</i> Author(s): J. N. Taillefer, P. Pimienta and D. Dhima	01008
16:20	<i>Large scale fire test on tunnel segment: real boundary conditions in order to evaluate spalling sensitivity and fire resistance.</i> Author(s): F. Robert, C. Collignon and M. Scalliet	04001
16:40	<i>Design and Performance of a Skid-Mounted Portable Compartment Fire Gas Furnace and Monitoring System.</i> Author(s): K. Mueller, Y. Kurama, M. McGinnis and M. Lisk	04002
<b>17:00</b>	<b>Discussion</b>	
<b>17:20</b>	<b>Closing</b>	
<b>19:30</b>	<b>Gala diner</b>	

## WORKSHOP PROGRAM

### Day 3 – Friday 27 September 2013

<b>09:00</b>	<b>Session 3-1 – Advanced modeling for spalling risk assessment (I)</b> Chairman: Alain Millard
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09:00	<i>A coupled thermo-hygro-chemo-mechanical model for the simulation of spalling of concrete subjected to fire loading.</i> (Keynote lecture) Author(s): M. Zeiml, Y. Zhang, C. Pichler, R. Lackner and H.A. Mang	05001
09:30	<i>Spalling of concrete due to fire exposure: a coupled fracture mechanics and pore pressure approach.</i> Author(s): B.B.G. Lottman, E.A.B. Koenders, C.B.M. Blom and J.C. Walraven	05002
09:50	<i>Modelling Explosive Spalling and Stress Induced Thermal Strains of HPC exposed to High Temperature.</i> Author(s): J. Ožbolt and J. Bošnjak	05003
09:10	<i>Prediction of the spatial occurrence of fire induced spalling in concrete slabs using random fields.</i> Author(s): R. Van Coile, P. Criel, R. Caspeepe and L. Taerwe	05004

**10:30** Coffee-break

<b>10:50</b>	<b>Session 3-2 – Advanced modeling for spalling risk assessment (II)</b> Chairman: Stefano Dal Pont
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10:50	<i>Fully coupled numerical simulation of fire in tunnels: from fire scenario to structural response.</i> Author(s): F. Pesavento, B.A. Schrefler, D. Gawin and J. Principe	05005
11:10	<i>Influence of moisture on fire resistance of side-plated RC beams.</i> Author(s): J. Kolšek, M. Saje, I. Planinc and T. Hozjan	05006
11:30	<i>On explicit modeling of polypropylene fiber effects on hydro-thermal behavior of heated concrete.</i> Author(s): V.H. Tran, F. Meftah, L. Izoret and M. Behloul	05007

**11:50** Discussion

**12:00** Lunch

<b>14:00</b>	<b>Session 3-3 – Advanced modeling for spalling risk assessment (III)</b> Chairman: Francesco Pesavento
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14:00	<i>Aggregate behaviour in concrete materials under high temperature conditions.</i> Author(s): C. Majorana, G. Mazzucco, V. Salomoni and G. Xotta	05008
14:20	<i>Simplified stochastic modeling of concrete spalling due to fire.</i> Author(s): I.J.J. van Straalen, R.D.J.M. Steenbergen, S.S.K. Lentzen and R. de Vries	05009

**14:40** Discussion

**15:00** Coffee-break

**15:15** Awards Ceremony – Best oral presentation of PhD students

**15:30** Final words – Closing of the workshop

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### Day 4 – Saturday 28 September 2013

**09:00** Meeting point for the shuttle

**10:00** Visit of VULCAIN at CSTB

**11:15** End of the visit

## POSTER SESSION – DETAILS

### Day 1 – Wednesday 25 September 2013

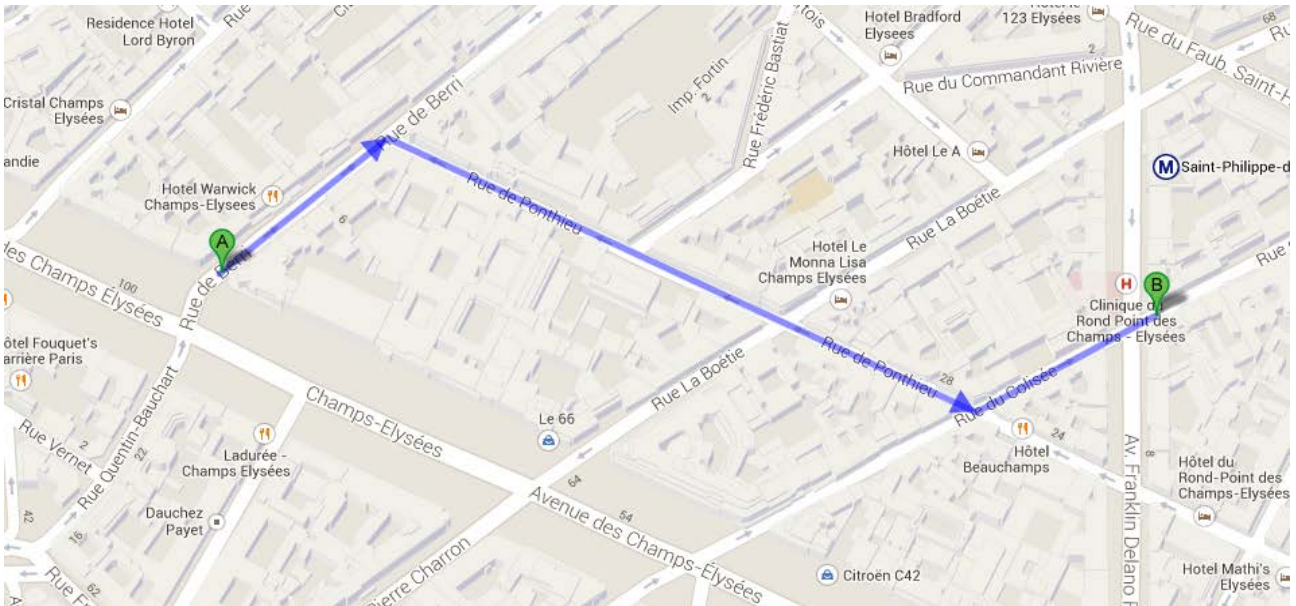
<b>14:40</b>	Plenary short presentations Chairman: Eddy Koenders	
14:40	<i>Spalling Behaviour of Nano SiO<sub>2</sub> High Strength Concrete at Elevated Temperatures.</i> Author(s): A. H. Shah, U. K. Sharma, D. A. B. Roy and P. Bhargava	01009
14:45	<i>Spalling of Concrete – Influence of Porosity and Specimen Size and its Critical Factors Regarding Safety.</i> Author(s): A. Korten and V. Wetzig	01010
14:50	<i>FRESCO - Fire spalling of High Performance and Ultra-High Performance Concrete</i> Author(s): N. Toropovs, M. Wyrzykowski, B. Weber, G. Sahmenko, M. Griffa, P. Lura	
14:55	<i>The fire resistance of concrete with polypropylene fibers.</i> Author(s): F. A. Corpas, B. González, L. Gómez, F. Rosa and J. M Figueroa	02005
15:00	<i>Residual characteristic properties of ternary blended steel fibre reinforced concrete subjected to sustained elevated temperature.</i> Author(s): D. A. Sinha, A. K. Verma and K.B. Prakash	07003
15:05	<i>Compressive strength at high temperatures of a concrete made with recycled tire textile and steel fibers.</i> Author(s): C. C. Santos and J. P. C. Rodrigues	07004
15:10	<i>Spalling of concrete subjected to blast loading.</i> Author(s): M. Foglar and M. Kovar	07002
<b>15:20</b>	Discussions with contributors at the tradeshow of paper posters	

### Access information – Lunches

#### Lunches at Restaurant "Le Boeuf sur le Toit"

Address: 34 rue du Colisée (15 to 20 minutes walk – see map)

#### From workshop venue to the restaurant



#### Front side of the restaurant





### Access information – Banquet Diner

#### Banquet Diner at "LA MAISON DES POLYTECHNICIENS"

When: Thursday 26<sup>th</sup> – 19:30

Address: 12, rue de Poitiers – 75007 Paris

Phone: 01 49 54 74 74

Metro line 12 - Station "Solférino" ; Bus: lines 63, 68, 69, 83, 84, 94

RER: line C – Station "Musée d'Orsay" (suburban train)

