



## Bond in Concrete 2022

### Bond, Anchorage, Detailing

**5th International Conference  
Stuttgart, Germany  
25th-27th July 2022**

### Final Program

Organized by:

Institute of Construction Materials, University of Stuttgart  
Materials Testing Institute, University of Stuttgart

Co-sponsored by:



## Symposium Location

University of Stuttgart  
Pfaffenwaldring 47  
70569 Stuttgart

Rooms:

V47.03  
V47.05  
V47.06

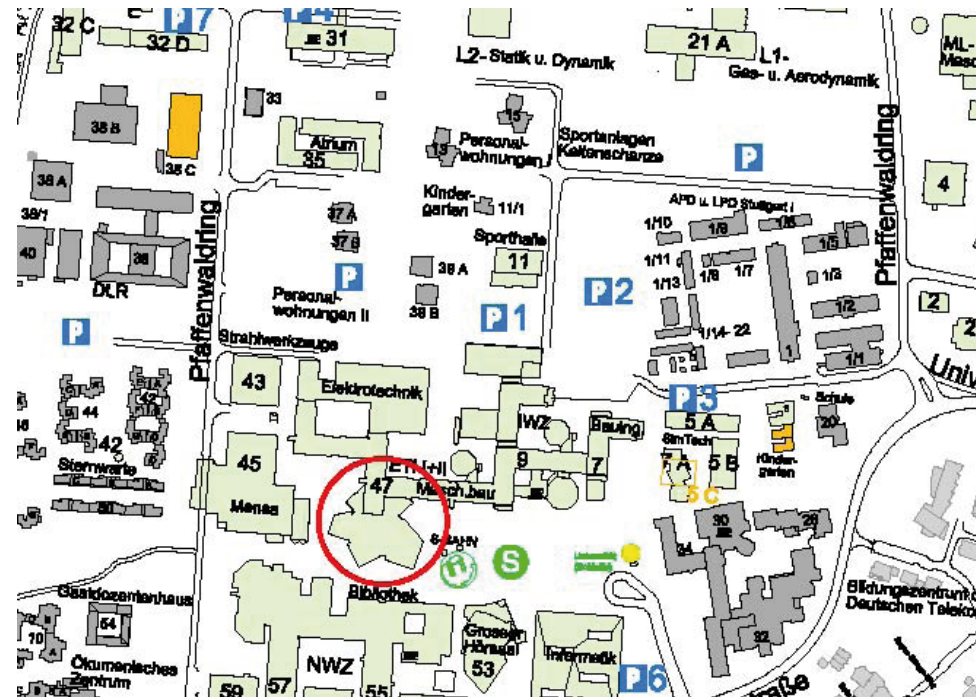
## Special Events:

### Welcome Evening:

Sunday, 24.07.2022, 17:00  
Carls Brauhaus am Schlossplatz  
Stauffenbergstraße 1  
70173 Stuttgart

### Conference-Dinner:

Tuesday, 26.07.2021, 19:00  
Location: Staatsgalerie Stuttgart,  
Konrad-Adenauer-Straße 30-32,  
70173 Stuttgart



## Bond in Concrete, Conference Program

	Monday 25.07.2021
9:00-10:30	Opening Session V47.03
9:00-9:30	Conference Opening
9:30-10:00	The Measurement of Risk. Can you calculate luck, bad luck, and chance? <i>Christian Hesse</i>
10:00-10:30-	Keynote <i>Werner Sobek</i>
10:30-11:00	Coffee Break

Monday 25.07.2021			
11:00-12:20	Session 1.1 Bond in New Materials 1 V47.03	Session 1.2 General Aspects of Bond 1 V47.05	Session 1.3 Anchorages and Laps 1 V47.06
11:00-11:20	Bond clause for FRP reinforcement in the future Eurocode 2 <i>Weber, A.</i>	Development and Lap Splice Length of Straight Bars in Compression <i>Valentini, G.; Leguesne, R. D.; Lepage, A.; Darwin, D.</i>	Review of the design rules for anchorages and laps according to the draft of the second generation of Eurocode 2 <i>Camps, B.; Schoening, J.; Hegger, J.</i>
11:20-11:40	Experimental study on bond of ribbed Fe-SMA bars in concrete <i>Fawaz, G.; Murcia-Delso, J.</i>	Casting Position Effects on Bond Performance of Reinforcement Bars <i>Moccia, F.; Metelli, G.; Ruiz, M. F.; Muttoni, A.; Plizzari, G.</i>	Assessment Framework in Background of TR069 <i>Hofmann, J.; Mahadik, V.; Sharma, A.</i>
11:40-12:00	Experimental investigation of bond between SAS 670/800 and EPSTAL steel bars and high-strength concrete in pull-out test - report and analysis of results, <i>Kijania-Kontak, M.; Winnicki, A.</i>	Reinforcement Bond in HPFRC: Analytical and Experimental Study on Effect of Specimen Form <i>Tsiotsias, K.; Saikali, R.; Pantazopoulou, S. J.</i>	Semi-empirical lap length design <i>Schoening, J.; Hegger, J.</i>
12:00-12:20	Bond Strength of High Performance Concrete to Seven-Wire Tensioned Strands, <i>Seruga, A.; Dyba, M.</i>	Investigations on the bond behavior of ribbed reinforcing bars with the use of fiber-optic strain measurement, <i>Froese, J.; Fischer, O.</i>	The beam-end test for evaluating the bond behavior of reinforcing steel in concrete <i>Sippel, T. M.; Hofmann, J.</i>
12:20-13:30	Lunch Break		

Monday 25.07.2021			
13:30-15:10	Session 2.1: Bond in new materials 2 V47.03	Session 2.2: General Aspects of Bond 2 V47.05	Session 2.3: Bond under severe loading 1 V47.06
13:30-13:50	Top-bar effect in self-compacting concrete full-scale wall element made through a single casting point <i>Kucharska, M.; Dybel, P.</i>	A proposal for a beam end type bond test: test procedures and preliminary results <i>Metelli, G.; Cairns, J.; Plizzari, G. Marchina, E., Haydar, A.;</i>	Bond behavior of high strength concrete under high cyclic pull-out loading <i>Koschemann, M.; Curbach, M.; Marx, S.</i>
13:50-14:10	Effect of Material Properties on the Bond Failure Mode of Fiber-Reinforced Cementitious Composites <i>Soliman, A. A.; Kumar, D.; Heard, W. F.; Williams, B. A.; Ranade, R.</i>	Implementation of a XFEM-Enhanced Solid Element for Numerical Modeling of RC Structures, including Concrete, Steel Rebars and Bonding <i>Dominquez-Ramirez, N.; Ibrahimbegovic, A.</i>	Bond in RC Structures at High Temperature and in Fire: Lessons from the Past and Hot Issues still Open to Investigation <i>Gambarova, P. G.; Muciaccia, G.</i>
14:10-14:30	Experimental and numerical investigation of tensile bond strength of reinforcing bars in UHPFRC <i>Massicotte, B.; Lagier, F.; Bastide, R.; Rosini, A.; Renaud-Laprise, C.</i>	Formulation of a New Solid-Layer Finite Element to Simulate Coat-Delamination <i>Suarez-Suarez, A.; Dominguez-Ramirez, N.; Susarrey, O.</i>	Experimental investigations on residual bond capacity of concrete exposed to fire considering different bonded lengths and position of test rebars <i>Das, A.; Bosnjak, J.; Sharma, A.</i>
14:30-14:50	Steel fibre-cement matrix interaction in a ultra high-strength concrete: an investigation at the microstructural level <i>Paglia, C.; Antonietti, S.; Caroselli, M.; Corredig, G.</i>	Parallelism for NLFEM for RC incorporated with bond redistribution procedure <i>Sato, Y.; Naganuma, K.; Knaneko, Y.</i>	Evaluation of pull-out capacity of post installed rebars during fire: Sensitivity to thermal properties <i>Lakhani, H.; Hofmann, J.; Aggarwal, J.</i>
14:50-15:10	Bond Mechanism of Nonprestressed and Prestressed CFRP to Concrete with EBR and EBROG methods <i>Moshiri, N.; Martinelli, E.; Czaderski, C.</i>	Different Anchoring Concepts for FRP rebars and anchors <i>Weber, A.; Dittmar, J.; Mahadik, V.</i>	The deflection of RC and R/FRC columns under bending moment and axial load <i>Fantilli, A. P.; Orfeo, B.; Pérez Caldentey, A.</i>
15:10-15:30		Behavior of column shoe systems – experimental and accompanying finite element investigations <i>Sippel, T. M.; Hofmann, J.</i>	3D FE simulation of bonded anchors under tensile load during fire <i>Lakhani, H.; Hofmann, J.</i>
15:30-15:50	Coffee Break		

Monday 25.07.2021			
15:50-17:30	<b>Session 3.1: Bond in new materials 3 V47.03</b>	<b>Session 3.2: Transfer and Development 1 V47.05</b>	
15:50-16:10	Bond of FRP Rebars in Fine-Grained Alkali Activated Concrete <i>Tekle, B. H.; Holschemacher, K.</i>	Lap splicing of large high-strength steel reinforcing bars <i>Rulon, R.; Lequesne, R. D.; Darwin, D.; Lepage, A.</i>	
16:10-16:30	Experimental and analytical study of GFRP bar to concrete bond <i>Sdiri, A.; Daoud, A.; Ghorbel, E.</i>	Bond strength of reinforcing bars with different encasement qualities - Guidelines for the development length of reinforcing bars in shotcrete <i>Basso Trujillo, P.; Jolin, M.; Massicotte, B.; Bissonnette, B.</i>	
16:30-16:50	Resin Matrix Dependent Bond-to-Concrete Performance of Basalt FRP Rebars <i>Kampmann, R.; Schneider, T.; Telikapalli, S.; Harnisch, J.</i>	Novel reliability-based design formulation for evaluating transmission and anchorage lengths in prestressed concrete elements <i>Faleschini, F.; Hofer, L.; Belluco, S.; Pellegrino, C.</i>	
16:50-17:10		Lap splice connection of new to existing rebars: a numerical study based on literature data <i>Di Nunzio, G.; Muciaccia, G.</i>	

Tuesday 26.07.2021			
9:00-10:00	<p align="center"><b>Keynote Bartos</b> <b>V47.03</b></p>		
10:00-12:20	<p><b>Session 4.1:</b> <b>Assessment of degradation, part 1</b> <b>V47.03</b></p>	<p><b>Session 4.2:</b> <b>Bonded and headed anchors 1, part 1</b> <b>V47.05</b></p>	
10:00-10:20	<p>Codifying the Development, Splicing, and Detailing of Historical Bar Types for Structural Evaluation and Rehabilitation <i>Feldman, L. R.; Cairns, J.; Palmisano, F.</i></p>	<p>Effect of static load level on the fatigue resistance of post-installed anchors in case of steel failure <i>Froehlich, T.; Lotze, D.; Hofmann, J.</i></p>	
10:20-10:40	<p>Corrosion effects on bond between strand and concrete in pre-tensioned members: analytical modeling of transmission length <i>Belluco, S.; Fabris, N.; Faleschini, F.</i></p>	<p>Investigation of Creep Behavior of Bonded Anchors by Nanoindentation and Numerical Simulation <i>Zhu, F.; Bergmeister, K.</i></p>	
10:40-11:00	<p align="center">Coffee Break</p>		

Tuesday 26.07.2021			
10:00-12:20	<b>Session 4.1: Assessment of degradation, part 2 V47.03</b>	<b>Session 4.2: Bonded and headed anchors 1, part 2 V47.05</b>	
11:00-11:20	Bond and re-anchoring tests of post-tensioned steel tendon in case of strand failure <i>Asp, O.; Tulonen, J.; Laaksonen, A.</i>	Effect of confinement on the behavior of FRP straight anchors <i>Muciaccia, G.; Khorasani, M.; Mostofinejad, D.</i>	
11:20-11:40	Characterization of post-fire bond behavior for post-installed rebars in concrete <i>Abdelrahman A. Chehade, N.; Pinoteau, N.; Al Mansouri, O.; Piccinin, R.; Abate, M.; McBride, K.; Remond, S.; Hoxha, D.;</i>	Long Term Performance of Bonded Anchors Embedded in Concrete <i>Oña Vera, A. C.; Ninčević, K.; Boumakis, I.; Botte, W.; Sartipi, S.; Wan-Wendner, R.</i>	
11:40-12:00	Meso-scale analysis of steel-concrete bond damaged by alkali-silica reaction via a 3D Rigid Body Spring Model <i>Luo, J.; Wang, Y.; Asamoto, S.; Nagai, K.</i>	Steel fibre reinforcement influence on the breakout resistance of anchors in normal strength concrete <i>Mellios, N.; Hufelschulte, F.; Spyridis, P.</i>	
12:00-12:20	Experimental study on bond degradation in RC tension members under cyclic loads <i>Lemcherreg, Y.; Zanuy, C.; Vogel, T.; Kaufmann, W.</i>	Fiber optic sensing and image correlation in post-installed lap splices <i>Croppi, J. I.; Genesio, G.; Piccinin, R.; Ahrens, M. A.; Mark, P.</i>	
12:20-12:40	A parametric study on the influence of steel diffusivity on Pinoteau's Resistance Integration Method for post-installed rebars in concrete under fire <i>Ben Mouhou, F.; Al Mansouri, O.; Pinoteau, N.; Mege, R.; Remond, S.</i>		
12:40-13:30	Lunch Break		



Tuesday 26.07.2021			
13:30-14:50	<b>Session 5.1: Transfer and Development 2 V47.03</b>	<b>Session 5.2: Bonded and headed anchors 2 V47.05</b>	
13:30-13:50	Anchorage of prestressing strand in 40 year old half joint bridge beams <i>Cairns, J.; Cotsovovs, D.; Suryanto, B.; Kotsovovs, G.</i>	Behavior of headed stud anchorages with supplementary reinforcement under combined tension and shear loads <i>Sippel, T. M.; Sharma, A.; Mear, J.; Bujnak, J.</i>	
13:50-14:10	Anchorage of High-Strength No. 14 (43 mm) Hooked Bars <i>Banaeipour, A.; Darwin, D.; O'Reilly, M.; Lepage, A.; Lequesne, R.</i>	Numerical investigations to assess the base plate stiffness for fastenings in concrete <i>Pregartner, T.; Bokor, B.; Sharma, A.</i>	
14:10-14:30	Shear-transfer in precast column base connections <i>Yrjola, J. A. A.; Bujnak, J.</i>	Performance Test of Long Post-installed Anchors <i>Nakano, K.; Numata, T.; Arika, K.; Matsuzawa, K.</i>	
14:30-14:50	Transmission Length of Prestressing 7φ5 mm Strand in Axially Prestressed High Performance Concrete Members <i>Seruga, A.; Dyba, M.</i>	Confined pull-out tests of bonded anchors in steel fibre reinforced concrete – preliminary studies <i>Walter, L.; Spyridis, P.</i>	
14:50-15:10	Coffee Break		

Tuesday 26.07.2021			
15:10-16:50	<b>Session 6.1</b> <b>General Aspects of Bond 2</b> <b>V47.03</b>	<b>Session 6.2:</b> <b>Bond between fibers and concrete</b> <b>V47.05</b>	
15:10-15:30	Investigation of local bond behavior using distributed optical fiber sensing <i><u>Koschemann, M.; Curbach, M.; Marx, S.</u></i>	Influence of Concrete Moisture on the Pull-Out Resistance of Steel Fibres <i><u>Markert, M.; Gebuhr, G.</u></i>	
15:30-15:50	Concrete Breakout Failures in Rebar End Anchorages <i><u>Mahadik, V.; Hofmann, J.; Genesio, G.; Sharma, A.</u></i>	Adhesion mechanism of polyvinyl alcohol (PVA) fiber in alkali-activated slag/fly ash pastes <i><u>Zhang, S.; Duque-Redondo, E.; Kostiuhenko, A.; Dolado, J.; Ye, G.</u></i>	
15:50-16:10	Bond in lap-splices: Effect of lap-splice arrangement and passive reinforcement due to concrete cover and transverse reinforcement <i><u>Chronopoulos, P.</u></i>	Textile reinforced concrete - Analysis of cracking along the textile strand in concrete <i><u>Bessling, M.; Orłowsky, J.</u></i>	
16:10-16:30	Nonlinear spring modelling approach for the evaluation of tension loaded anchorages in cracked concrete <i><u>Bokor, B.; Sharma, A.; Hofmann, J.</u></i>	Bond of CFCM – a new form of bond <i><u>Balazs, G. L.; Csurgai, F.; Solyom, S.</u></i>	
16:30-16:50	Numerical modeling of reinforced concrete bar under tension <i><u>Medić, S.; Ožranović, Š.; Zlatar, M.</u></i>		
19:00 -	<b>Conference Dinner</b> <b>Staatsgalerie Stuttgart</b>		

Wednesday 27.07.2021			
9:00-10:40	<b>Session 7.2: Bond in New Materials 4 V47.03</b>	<b>Session 7.1 Joint fib / ACI Session V47.05</b>	<b>Session 7.3: General aspects of bond V47.06</b>
9:00-9:20	The X-ray computed tomography analysis of rebar-to-concrete interface in wall elements made with self-compacting concrete <i>Dybel, P.; Kucharska, M.</i>	Recent developments in ACI 408 Committee <i>Lequesne, R.D.</i> (Presentation only, no Paper)	A Method to Estimate the Drift Capacity of Reinforced Concrete Walls with Lap Splices at their Bases <i>Pollalis, W.; Pujol, S.</i>
9:20-9:40	Effects of epoxy and sand-coating types on the bond behavior of textile reinforcements in UHPC <i>Hong, S.-G.; Youm, H.-S.</i>	An overview of enhancements to provisions for bond in the draft Fib Model Code 2020 <i>Plizzari, G.; Metelli, G.; Cairns, J.</i>	Long anchorage resistance of reinforcement bars derived from local bond-slip relationships for good and poor bond conditions <i>Corres, E.; Muttoni, A.</i>
9:40-10:00	High-Temperature Residual Bond Behavior of Strain-Hardening Cementitious Composites <i>Kumar, D.; Deshpande, A. A.; Soliman, A. A.; Ranade, R.</i>	Do design codes overestimate the influence of casting position? <i>Cairns, J.</i>	Strengthening of anchorages with post-installed reinforcement under shear loading <i>Vita, N.; Sharma, A.; Hofmann, J</i>
10:00-10:20	Bond behaviour of seven-wire non-pretensioned plain strands embedded in high-performance concrete <i>Seruga, A.</i>	Recent developments in Eurocode 2 <i>Muttoni, A.</i> ( Presentation only, no Paper)	Post-installed rebars in young age concrete <i>Al-Mansouri, O.; Mège, R.; Pinoteau, N.</i>
10:20-10:40	Numerical modeling of the behavior of the RC elements during hydration process: a comparison between the GFRP and the steel reinforcement <i>Sdiri, Ahlem; Kammoun, Slim; Daoud, Atef</i>	Discussion	
10:40-11:00	Coffee Break		

Wednesday 27.07.2021			
11:00-12:40		<b>Session 8.1</b> <b>Joint fib / ACI Session 2</b> <b>V47.05</b>	<b>Session 8.2:</b> <b>Bond under severe loading conditions 3</b> <b>V47.06</b>
11:00-11:20		Recent developments in ACI 562 Committee <i>Feldman, L. R.</i> ; (Presentation only, no Paper)	Beam-end Bond Testing in Split Hopkinson Bar under High Slip Rates <i>Máca, P.; Leicht, L.; Fíla, T.; Beckmann, B.; Curbach, M.</i>
11:20-11:40		Evaluation of anchorage and lap capacity of bars in the assessment of existing RC Structures according to fib Model Code 2020 and the 2 <sup>nd</sup> Generation Eurocode 2 <i>Palmisano, F.</i> (Presentation only, no Paper)	Fatigue influence on the bond condition of lapped joints of reinforced concrete <i>Zanuy, C.</i>
11:40-12:00		Model for the assessment of bond in corroded steel ribbed bars <i>Prieto, M.; Tanner, P.; Andrade, C.</i>	Behavior of bond between concrete and steel reinforcement under push-in loading considering tip-bearing effect <i>Spartali, H.; Baktheer, A.; Shekh Alshabab, S.; Chudoba, R.; Hegger, J.</i>
12:00-12:20		Anchorage capacity of post-installed rebars <i>Eligehausen, R.; Genesio, G.; Muciaccia, G.; Sharma, A.</i> (Presentation only, no Paper)	Numerical analysis of beams with lap splices under cyclic load <i>Tonidis, M.; Sharma, A.</i>
12:20-12:40		Discussion	Experimental investigation on the concrete cone capacity of bonded anchors at high temperature <i>Robson, M. N.; Al-Mansouri, O.; Lahouar, A.; Pinoteau, N.; Abate, M.; McBride, K.; Piccinin, R.; Remond, S.; Hoxha, D</i>
12:40 -13:00	Lunch Break		
	End of Conference		