

Welcome Welcome

The Stapp Car Crash Conference is the premier forum for the presentation of research in impact biomechanics, human injury tolerance, and related fields that advance the knowledge of land-vehicle crash injury protection. The conference provides an opportunity to participate in open discussion regarding the causes and mechanisms of injury, experimental methods and tools for use in impact biomechanics research, and the development of new concepts for reducing injuries and fatalities in automobile crashes.

The papers that will be presented at this year's Stapp Conference cover a range of timely and important topics in impact biomechanics and occupant protection. These topics include head and neck impact response and injury, torso impact response and injury, occupant restraint system and ATD performance, and injury assessment methods.

We would like to thank all of the authors as well as members of the Stapp Advisory Committee for the significant efforts that have been put forth in preparing and reviewing these papers. We encourage all attendees to use the time provided following each paper presentation to offer comments

and questions to the presenters. This is a valuable opportunity for further clarification of the research from which all in attendance will benefit. It is hoped that the material presented at this year's conference will provide ideas and motivation for further research that will lead to improvements in occupant protection systems. We also encourage those who are active in impact biomechanics research to submit abstracts for papers to be included in next year's Stapp Conference, which will be held at the Hyatt Regency in San Antonio, Texas.

On behalf of the Stapp Car Crash Conference Advisory Committee, we invite you to participate in what promises to be a stimulating and enjoyable 51st Stapp Conference at the Catamaran Resort Hotel in San Diego, California.

Alan M. Nahum and John W. Melvin
General Co-Chairs
Leda L. Ricci, Executive Director
51st Stapp Car Crash Conference

STAPP



Dr. John Paul Stapp, In Memoriam, 1910-1999

A bronze bust of Dr. John Paul Stapp Col USAF MC is displayed each year at the Stapp Car Crash Conference. It was created by artist Walter Rawley of Ruidoso, New Mexico, and donated by Dr. Stapp. The bust depicts Colonel Stapp when he rode the rocket sled at Holloman Air Force Base, subjecting himself to injury-producing accelerations in order to study human tolerance to high-*g* environments. In his final sled ride in 1954, Dr. Stapp was accelerated to 632 miles per hour in five seconds, and was then decelerated to a stop in 1.4 seconds, experiencing a peak sled deceleration in excess of 40 *gs*.

Visit our website at <http://www.stapp.org/>

Advisory Committee

Stapp Advisory Committee

John P. Stapp, 1955-1999 Permanent Chairman
Colonel USAF MC

Richard F. Chandler, 2007 Chairman of the Board

Alan M Nahum, University of California, San Diego

John W. Melvin, Tandelta Inc.

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Wayne State University

PMG Technologies

National Highway Traffic Safety

Administration, ret.

Wayne State University

Wayne State University

University of Pennsylvania

General Motors Corporation, ret.

Duke University

Chrysler

Medical College of Wisconsin

Ford Motor Company

Ford Motor Company

The University of Michigan

Ristal Engineering

LAB PSA-Renault

University of Pennsylvania

TNO The Netherlands/Chalmers

University

2007 Conference Host

University of California, San Diego

Co-Sponsors

Wayne State University

University of Michigan Transportation Research Institute

Conference Registration

Conference Registration Information

Registrations may be faxed to the Stapp registration office until October 26, 2007.

- Complete and return the registration form provided in this program with payment to the address or fax number listed at the top of the form.
- Payments may be made by major credit card or check. Electronic funds transfers are not accepted.
- Conference badges will be available at the registration desk.
- Registration for the conference includes one copy of the *Stapp Journal*, technical session attendance, continental breakfasts, refreshment breaks, and evening receptions. Student registrations do not include the *Stapp Journal*.

ON-SITE REGISTRATION — Kon Tiki Ballroom Foyer

Sunday, October 28	3:30 PM – 6:00 PM
Monday, October 29	7:30 AM – 4:00 PM
Tuesday, October 30	8:00 AM – 4:00 PM
Wednesday, October 31	8:00 AM – 10:00 AM

Stapp Car Crash Journal Pickup

Pre-registered attendees, as well as those registering on-site, may pick up their copy of the *Stapp Car Crash Journal* along with a conference badge in the Kon Tiki Ballroom Foyer.

Additional copies of the *Stapp Journal* may be purchased for \$119.95 list/\$95.96 for SAE members. Also available for purchase from SAE at \$378/\$302.40 for SAE members is a CD collection of *Stapp* technical papers. The *Stapp* CD includes papers published from 1966 through 2006 and the 1993 and 1997 Proceedings of the Child Occupant Protection Symposiums. The collection is fully searchable and includes 1,310 technical papers in PDF format that can be viewed and printed. Individual documents can be searched for key words and phrases using Adobe Acrobat Reader, which is included with each CD-ROM. The *Stapp Journal* and/or historical collection of *Stapp* papers on CD may be ordered following the conference, by calling (724) 776-4970 [toll free U.S. and Canada (877) 606-7323], or by faxing (724) 776-0790.

E-mail: publications@sae.org; Internet: <http://store.sae.org/>

SAE Publications

SAE publications will not be available for purchase during the conference. Publications are available on the SAE web site at www.store.sae.org/

**For Stapp Conference information,
call Rachael Ross (734) 763-3582 or
E-mail: rachaelr@umich.edu**

Hotel Information

Hotel Information

Location – 3999 Mission Boulevard

The Catamaran Resort Hotel in San Diego is the host hotel for the *Stapp* Conference. It is located on Mission Bay, “the world’s largest aquatic park.” The Catamaran Resort Hotel is just 100 yards from the Pacific Ocean and is surrounded by acres of lush foliage. It is 15 minutes from the San Diego International Airport.

Accommodations/Reservations

Reservations at the Catamaran Resort Hotel may be made by calling the hotel directly at (858) 488-1081 or registering on-line from the *Stapp* website – <http://www.stapp.org>. The room rate for the *Stapp* Conference is \$159 single/double if you register by October 9th. A limited number of rooms are available at a government rate. Be sure to identify yourself as attending the *Stapp* Car Crash Conference.

Please make your reservations as soon as possible to be assured of a room at the *Stapp* Conference hotel. Reservations must be guaranteed by credit

card or one-night’s deposit. Reservations must be cancelled one day prior to date of arrival before 3:00 p.m. EST to have your deposit refunded. Reservations requested after October 9th will be confirmed at the *Stapp* rate on a space-available basis.

Hotel Parking

Parking is \$12.00 per day for self-parking and \$16.00 per day for valet parking.

Hotel Amenities

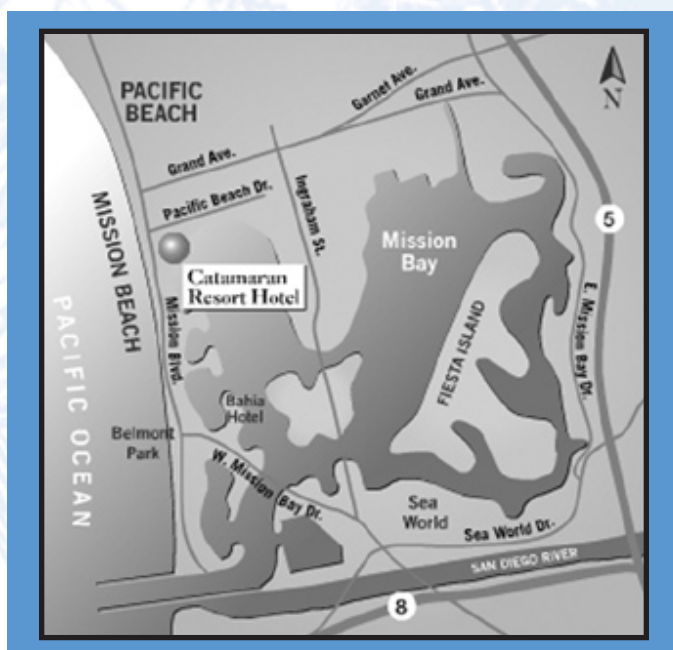
The Catamaran Resort Hotel offers many guest facilities, including a fitness center with a bay-view whirlpool, Catamaran Spa, heated outdoor pool & jacuzzi, business service center, and gift shop. Each room is equipped with high-speed internet access, private voice mail, cable TV with HBO, coffee maker, hair dryer, iron and ironing board. High-speed internet is also available in all meeting rooms and lobby areas.

Travel Information

Transportation from San Diego International Airport

Car Rental

Car rental reservation boards are located near the baggage claim areas of Terminals 1 and 2. Use the courtesy phones provided to request shuttle transport to the car rental company of your choice. All car rental agencies are off-site and do not have counters inside the terminal facilities. Car rental shuttles boarded at the Transportation Plazas (across from Terminals 1 and 2) will take you to their rental locations. Car rental companies available are Advantage, Alamo, Avis, Budget, Dollar, Enterprise, Fox, Hertz, National, Payless, Rent4Less, Thrifty and West Coast.



Hotel Dining

Oasis Snack Shack offers take-out coffee, juice and breakfast bakeries in the morning and sandwiches in the afternoon. **Atoll Restaurant** is a five star restaurant that provides a variety of dishes for breakfast, lunch and dinner. **Moray's Lounge** is a casual place to have a drink or meet friends and colleagues for a quick snack. It features a lighter fare menu for lunch or dinner. Relax to intimate piano jazz offered nightly at Moray's.

San Diego Weather

San Diego enjoys beautiful weather year round. During October the temperature is 70-75 degrees Fahrenheit. For an up-to-date 10-day weather forecast for San Diego, visit the following web sites before your departure: <http://www.SanDiego.org/nav/Visitors/VisitorInformation/Weather> and www.weather.com.

Taxis

Cab fare from the airport to the hotel is about \$23.00.

Shuttle

Cloud 9 operates a shuttle service from the airport to area hotels. The cost is \$12 each way, per person. You may pick up the shuttle at the Transportation Plazas across from Terminals 1 and 2. A reservation is not required. Note: If the shuttle has several passengers, it could take a half hour or more to get to the Catamaran Resort Hotel.

Directions to the Catamaran Resort Hotel

From I-8 heading West (from Arizona or El Cajon)

Take the I-8 West to the West Mission Bay Dr/Sports Arena Blvd exit. Turn right at the exit. Follow the signs on the right for West Mission Bay Drive. This is a loop. The last road before the ocean is Mission Blvd. Make a right and the hotel is 1 mile down on the right-hand side. The Catamaran Resort Hotel is at the corner of Mission Blvd and Pacific Beach Drive.

From I-5 heading South (from Los Angeles)

Take I-5 South into San Diego. Exit at the Balboa Ave/Garnet Ave exit. At the third light, turn right, this is Garnet Ave. Follow Garnet Ave to Mission Blvd (this is the last road before the ocean) and make a left. The hotel will be 6 blocks down on the left-hand side. The Catamaran Resort Hotel is at the corner of Mission Blvd and Pacific Beach Drive.

From I-5 heading North (from the Airport or Chula Vista or National City)

Follow I-5 North and exit Grand Ave/Garnet Ave. Go to the immediate left lane. At the first traffic light, take a left. This is Grand Ave. Follow Grand Ave to Mission Blvd (this is the last road before the ocean). Make a left on Mission Blvd and the hotel will be 4 blocks down on the left side. The Catamaran Resort Hotel is at the corner of Mission Blvd and Pacific Beach Drive.

From I-15 heading South (from Las Vegas or Riverside or Escondido)

Take I-15 South to Hwy 52 West. From 52 West take I-5 South. Exit on the Balboa Ave/Garnet Ave exit (this is a straight-away). At the third traffic light, make a right. This is Garnet Ave. Make a left on Mission Blvd and the hotel will be 6 blocks on the left-hand side. The Catamaran Resort Hotel is at the corner of Mission Blvd and Pacific Beach Drive.

Conference Information

Speaker Lounge — Boardroom East

The speaker lounge is available to all authors and co-authors of conference papers.

Stapp Conference Technical Sessions — Kon Tiki Ballroom

- Please check the session schedule in this program for starting times.
- Audio or video recording of presentations or discussions, and taking of photographs during the technical sessions, is not permitted.
- In consideration of the speakers and conference attendees, please turn off all cell phones when entering the meeting room.

Message Center

For information on conference-related activities or to leave a message for someone attending the conference, please call the hotel at (858) 488-1081

and ask for the Stapp Conference Registration Desk. All messages will be posted in the Stapp Conference registration area. Fax messages may be sent to (858) 488-1619.

Business Center

The Business Center is located on the Lobby Level close to the Registration Desk. It is open Monday through Friday from 9:00 AM to 5:00 PM. The following services are available in the business center: conference room rental, photocopies/transparencies, in/out facsimile service, internet access, computer usage, laptop hookup, laser printing, CD duplication, file downloading, equipment rental, and office supplies. The business center can also help you with any UPS shipping needs you might have.

Hosted Receptions & Refreshments

Sunday evening, Denton ATD will host a reception to welcome Stapp Conference attendees from 6:30 – 8:30 PM in the Aviary Ballroom.

Monday evening, DTS will host a reception on the North Beach from 5:30 – 7:30 PM. The weather backup is the Aviary Ballroom.

Tuesday evening, First Technology Safety Systems will host a reception cruise on the William D. Evan paddleboat from 5:30 – 7:30 PM.

Preceding the Stapp Conference

Sunday, October 28 — 9:00 AM–5:00 PM — Kon Tiki Ballroom

35th International Workshop on Human Subjects for Biomechanical Research

Sponsored by NHTSA/Human Injury Research Division

Erik G. Takhounts, Chair

National Highway Traffic Safety Administration

The purpose of the workshop is to provide a forum for the exchange of ideas and the presentation of ongoing research investigations using human volunteers or surrogates. No registration is required. For additional information, contact:

Erik G. Takhounts, Ph.D.
NHTSA/Human Injury Research Division, NVS-323
400 Seventh Street, S.W.
Washington, DC 20590

Phone: (202) 366-4737
Fax: (202) 366-5670
E-mail: Erik.Takhounts@dot.gov

Monday, October 29

Technical Program

In the Kon Tiki Ballroom

**Audio and videotaping are not permitted. Please turn off cell phones in the meeting room.
Smoking is not permitted in the sessions.**

- 9:20 **WELCOME AND OPENING REMARKS**
Alan M. Nahum, University of California, San Diego
John W. Melvin, Tandelta Inc.
- 9:30 **JOHN PAUL STAPP MEMORIAL LECTURE**
How A Fledgling Engineering Organization Became a Giant in Public Health
Alan M. Nahum, M.D., University of California, San Diego

HEAD AND NECK IMPACT RESPONSE AND INJURY: Part 1

- Co-Chairs: Beth A. Winkelstein, University of Pennsylvania
Priya Prasad, Ford Motor Company
- 10:00 **Parametric Study of Head Impact in the Infant**
Brittany Coats, University of Pennsylvania; Songbai Ji, Dartmouth College; and Susan S. Margulies, University of Pennsylvania
- 10:30-11:00 REFRESHMENT BREAK
- 11:00 **A Study of the Response of the Human Cadaver Head to Impact**
Warren N. Hardy, Matthew J. Mason, Craig D. Foster, Chirag S. Shah, James M. Kopacz, King H. Yang, and Albert I. King, Wayne State University;
Jennifer Bishop and Michael Bey, Henry Ford Health System; William Anderst and Scott Tashman, University of Pittsburgh
- 11:30 **Predictors for Traumatic Brain Injuries Evaluated through Accident Reconstructions**
Svein Kleiven, Royal Institute of Technology
- 12:00-2:00 LUNCH

HEAD AND NECK IMPACT RESPONSE AND INJURY: Part 2

- Co-Chairs: David F. Meaney, University of Pennsylvania
Xavier Trosseille, LAB PSA Peugeot-Citroën Renault
- 2:00 **Biomechanical Response of the Bovine Pia-Arachnoid Complex to Normal Traction Loading at Varying Strain Rates**
Xin Jin, Wayne State University; Chunsheng Ma, Wayne State University/Tsinghua University;
Liyang Zhang, King H. Yang, and Albert I. King, Wayne State University; Guang Dong and Jinhuan Zhang, Tsinghua University
- 2:30 **Region-Specific Tolerance Criteria for the Living Brain**
Benjamin S. Elkin and Barclay Morrison III, Columbia University
- 3:00 **Variation in Nerve Fiber Strain in Brain Tissue Subjected to Uniaxial Stretch**
Atsutaka Tamura, Nagoya Institute of Technology/Toyota Central R&D Labs., Inc.;
Kazuaki Nagayama and Takeo Matsumoto, Nagoya Institute of Technology; Sadayuki Hayashi, Toyota Central R&D Labs., Inc.
- 3:30-4:00 REFRESHMENT BREAK
- 4:00 **Influence of Impact Speed on Head and Brain Injury Outcome in Vulnerable Road User Impacts to the Car Hood**
Rikard Fredriksson, Autoliv Research/Karolinska Institutet; Liyang Zhang, Wayne State University; Ola Boström, Autoliv Research;
and King H. Yang, Wayne State University
- 4:30 **Structural Changes in the Cervical Facet Capsular Ligament: Potential Contributions to Pain Following Subfailure Loading**
Kyle P. Quinn, Kathryn E. Lee, Chukwunyere C. Ahaghotu, and Beth A. Winkelstein, University of Pennsylvania
- 5:00 ANNOUNCEMENTS

Tuesday, October 30

Technical Program

In the Kon Tiki Ballroom

Audio and videotaping are not permitted. Please turn off cell phones in the meeting room.
Smoking is not permitted in the sessions.

9:30 **Biomechanical Basis for Injury Criteria Used in Crashworthiness Regulations — An Historical Perspective**

Priya Prasad, Ford Motor Company

TORSO IMPACT RESPONSE AND INJURY

Co-Chairs: John M. Cavanaugh, Wayne State University
 Stephen W. Rouhana, Ford Motor Company

10:00 **A Finite Element-Based Injury Metric for Pulmonary Contusion: Investigation of Candidate Metrics through Correlation with Computed Tomography**

F. Scott Gayzik, J. Jason Hoth, Melissa Daly, J. Wayne Meredith, and Joel D. Stitzel, Wake Forest University School of Medicine/
 Virginia Tech – Wake Forest University Center for Injury Biomechanics

10:30-11:00 REFRESHMENT BREAK

11:00 **Blood Flow and Fluid-Structure Interactions in the Human Aorta During Traumatic Rupture Conditions**

Sang-Hyun Lee and Richard Kent, Center for Applied Biomechanics, University of Virginia

11:30 **The Biomechanics of Human Ribs: Material and Structural Properties from Dynamic Tension and Bending Tests**

Andrew R. Kemper, Craig McNally, Clayton A. Pullins, Laura J. Freeman, and Stefan M. Duma, Virginia Tech-Wake Forest, Center for Injury Biomechanics; Stephen W. Rouhana, Ford Motor Company

12:00-2:00 LUNCH

2:00 **John Paul Stapp Best Paper Award** – Presentation by Harold J. Mertz and Priya Prasad, 2006 General Co-Chairs

The John Paul Stapp Award for the best paper of the 2006 Conference and Journal will be presented to Richard Kent, Stephen Stacey, Matthew Kindig, Jason Forman, and William Woods, Center for Applied Biomechanics, University of Virginia; Stephen W. Rouhana, Ford Motor Company; Kazuo Higuchi, Hiromasa Tanji, and Schuyler St. Lawrence, Takata Corporation; Kristy B. Arbogast, Children's Hospital of Philadelphia, for *Biomechanical Response of the Pediatric Abdomen, Part 1: Development of an Experimental Model and Quantification of Structural Response to Dynamic Belt Loading*.

Invitation and Call for Papers, Albert I. King, 52nd Stapp Conference, San Antonio, Texas

OCCUPANT RESTRAINT SYSTEM AND ATD PERFORMANCE

Co-Chairs: Lawrence W. Schneider, University of Michigan Transportation Research Institute
 Farid Bendjellal, Britax Childcare Limited

2:15 **Geometry of Rear Seats and Child Restraints Compared to Child Anthropometry**

Lynne E. Bilston and Nipun Sagar, Prince of Wales Medical Research Institute, University of New South Wales

2:45 **Injury Causation Scenarios in Belt-Restrained Nearside Child Occupants**

Matthew R. Maltese, Caitlin M. Locey, and Jessica S. Jermakian, The Children's Hospital of Philadelphia;
 Michael L. Nance and Kristy B. Arbogast, The Children's Hospital of Philadelphia/The University of Pennsylvania School of Medicine

3:15-3:45 REFRESHMENT BREAK

3:45 **Comparison of PMHS, WorldSID, and THOR-NT Responses in Simulated Far Side Impact**

Frank A. Pintar, Narayan Yoganandan, and Brian D. Stemper, Medical College of Wisconsin and VA Medical Center Research; Ola Boström, Autoliv AB; Stephen W. Rouhana, Ford Motor Company; Kennerly H. Digges, George Washington University; Brian N. Fildes, Monash University

4:15 **Effects of Shoulder Belt Limit Forces on Adult Thoracic Protection in Frontal Collisions**

Harold J. Mertz; and Dainius Dalmotas, D.J. Dalmotas Consulting, Inc.

4:45 ANNOUNCEMENTS

Wednesday, October 31

Technical Program

In the Kon Tiki Ballroom

Audio and videotaping are not permitted. Please turn off cell phones in the meeting room.
Smoking is not permitted in the sessions.

9:00 **Racecar Crash Safety Research and the Passenger Car**
 John W. Melvin, Tandelta Inc.

INJURY ASSESSMENT METHODS

Co-Chairs: Frank A. Pintar, Medical College of Wisconsin
 Harold J. Mertz, General Motors, ret.

9:30 **Development and Validation of a Synthetic Eye and Orbit for Estimating the Potential for Globe Rupture Due to Specific Impact Conditions**
 Eric Kennedy, Virginia Tech-Wake Forest Center for Injury Biomechanics;
 Paul Depinet, Kristopher Sullenberger, and Craig Morgan, Robert A. Denton, Inc.;
 Frederick Brozowski, United States Army Aeromedical Research Laboratory;
 Jason Inzana, Craig McNally, and Stefan Duma, Virginia Tech-Wake Forest Center for Injury Biomechanics

10:00 **Using Pressure to Predict Liver Injury Risk from Blunt Impact**
 Jessica L. Sparks, John H. Bolte, IV, Rebecca B. Dupaix, Kenneth H. Jones, and Steven M. Steinberg, The Ohio State University;
 Rodney G. Herriott, Transportation Research Center Inc.; Jason A. Stammen and Bruce R. Donnelly, NHTSA Vehicle Research Test Center

10:30-11:00 REFRESHMENT BREAK

11:00 **Correlation of Strain and Loads Measured in the Long Bones with Observed Kinematics of the Lower Limb During Vehicle-Pedestrian Impacts**
 Costin Untaroiu, Jason Kerrigan, Check Kam, and Jeff Crandall, Center for Applied Biomechanics, University of Virginia;
 Kunio Yamazaki and Keisuke Fukuyama, Japan Automotive Research Institute;
 Koichi Kamiji and Tsuyoshi Yasuki, The Japan Automobile Manufacturers Association;
 James Funk, Biodynamic Research Corporation

11:30 **Assessment of the Pubic Force as a Pelvic Injury Criterion in Side Impact**
 Tiphaine Leport and Pascal Baudrit, CEESAR; Xavier Trosseille, Philippe Petit, and Anna Palisson, LAB PSA Peugeot-Citroën Renault;
 Guy Vallancien, Université René Descartes

12:00 **STAPP STUDENT AWARDS**
 Presentation by Albert I. King

12:15 **ADJOURNMENT**
 John W. Melvin and Alan M. Nahum, 2007 General Co-Chairs

CALL FOR PAPERS

52nd STAPP CAR CRASH CONFERENCE®

Hyatt Regency
San Antonio, Texas
November 3-5, 2008

Albert I. King, General Chair
Wayne State University

The Stapp Conference Advisory Committee

invites abstracts of prospective papers for consideration in planning the 52nd Stapp Car Crash Conference. Papers are desired on research in impact biomechanics, human injury tolerance, and related fields that advance the knowledge of land-vehicle crash injury and occupant protection.

Paper offers should include the following information:

1. a tentative title for the paper
2. author information (name, affiliation, address, phone, fax, and e-mail)
3. an abstract of 200 to 300 words that
 - states the objective of the study
 - outlines the problem the study attempts to solve and the methodology
 - states explicitly the data to be included
 - summarizes the results and conclusions of the study

STAPP

Since paper invitations are based solely on the abstract, it is important that authors provide clear, descriptive, and specific information by which the paper offer can be evaluated. Abstracts will not be reconsidered.

Abstracts should be submitted

by March 10, 2008 to: Leda L. Ricci, Executive Director, Stapp Conference Advisory Committee, University of Michigan Transportation Research Institute, 2901 Baxter Road, Ann Arbor, MI 48109-2150. Authors may also submit abstracts by fax to (734) 647-3330 or by e-mail to leda@umich.edu. If you have questions regarding abstract or paper submission, please call (734) 936-1114.

To assure adequate time for peer review, authors whose abstracts are accepted will be invited to submit a completed paper by **May 23, 2008**. If there are extenuating circumstances, **authors of accepted abstracts may request permission to submit full manuscripts after May 23rd, but no later than June 23rd**, although this may reduce the likelihood of successfully completing the review process for this year's journal and conference. **Papers of accepted abstracts submitted after June 23rd will be submitted to the peer-review process, but will not be considered for the 2008 Conference and Journal.**

Acceptance of an abstract does not guarantee acceptance of a paper. Papers that are judged to meet the standards and requirements of the

Stapp Journal will be accepted for publication and presentation.

Papers offered for consideration at the Stapp Conference must be written in an objective, scholarly, and scientific manner, and must be free of commercialism, advertisement, and product identification. Papers must be prepared in clear English, and all data must be presented using SI units. Papers accepted for the conference must be presented at the conference.

All papers accepted for publication must be based on new data and results that will not have been published elsewhere prior to the conference, or submitted for publication elsewhere.

Authors reporting on research directly involving human or animal subjects are required to provide appropriate acknowledgment in the abstract submission and paper offer that the research was approved by a properly constituted institutional review board or ethics committee. Abstract submissions and paper offers that cannot provide this information will not be accepted for consideration by the Advisory Committee.

Technical Paper Awards

The **John Paul Stapp Award** is offered annually for the Stapp paper presented at the previous conference that best meets the goals of the Stapp Car Crash Conference as judged by the Stapp Advisory Committee.

Stapp Student Awards of \$1,500, \$1,000, and \$500 are presented annually to the three students who are judged by the Stapp Student Award Committee to have made the most significant contributions to the research presented in a Stapp paper. Authors of accepted papers that include significant contributions by a student are invited to describe those contributions in a letter in order for that student to be considered. The three awards are made at the end of the conference in which the papers were presented.

STAPP REGISTRATION

51ST STAPP CAR CRASH CONFERENCE®
October 29-31, 2007

EARLY REGISTRATION DEADLINE: October 9, 2007

Mail to:

Stapp Car Crash Conference
UMTRI, 2901 Baxter Road, Room 422, Ann Arbor, MI 48109-2150
Fax: (734) 647-3330 (Credit card registrations only)

For registration information:

Zonda Ketola — (734) 936-1114 or zketola@umich.edu
Rachael Ross — (734) 763-3582 or rachaelr@umich.edu

Please attach a business card or complete the following:

Dr./Mr./Ms. _____
Name (for Meeting Badge) _____
Job Title _____
Division _____
Company _____
Department _____
Road/P.O. Box _____
City _____ State (Province) _____
Zip+4/Postal Code _____ Country (if not USA) _____
Work Phone _____
Fax _____
E-mail Address _____

☐ Please check here if you require special accommodations and attach a written description of your needs.



Hotel reservations and conference registration are also available on the Stapp website: <http://www.stapp.org/>



CID	CLB	CL#	OB	O#

NOTE: You must register by October 9, 2007 to be eligible for the reduced registration rate.

**51ST Stapp
Car Crash Conference®
October 29-31, 2007**

- ☐ Attendee
- ☐ Presenter (NHTSA Workshop presenters are not eligible.)
- ☐ Student* (Registration must be accompanied by a letter from student's advisor.)
- ☐ Advisory Committee Member

Children under 18 are not permitted at conference functions.

Registration includes admission to all technical sessions, continental breakfasts, refreshment breaks, evening receptions, and a copy of the Stapp Journal.

*Student registration does not include the Stapp Journal.

CONFERENCE FEE

	PRIOR TO 10/09/07	AFTER 10/09/07
Attendee	\$ 600	\$ 650
Presenter (NHTSA Workshop presenters are not eligible.)	\$ 500	\$ 550
Student* (Registration must be accompanied by a letter from student's advisor.)	\$ 100	\$ 100
Advisory Committee Member	\$ 350	\$ 400
Total	\$	\$

Payment Method*

☐ Check enclosed. Make payable to "Stapp Association."

☐ Charge my: ☐ MasterCard ☐ Visa ☐ American Express ☐ Discover

Card No. _____ Exp. Date _____

Visa, MasterCard, Discover 3-Digit Security No. (on back of card) _____

American Express 4-digit Security No. (on front of card) _____

Name on credit card _____

Billing Address _____

Signature _____

*Payment must accompany registration. All cancellations must be submitted in writing. There is a \$50.00 handling charge for cancellations received before October 9, 2007. We regret we cannot process any refunds for cancellations following that date. Refunds are processed six to eight weeks after the conference. **If you have any questions, please call (734) 936-1114.**

**35TH NHTSA-sponsored International Workshop
on Human Subjects for Biomechanical Research
October 28, 2007**

☐ Check here to register. No registration fee is required.