

# PROGRAM AND REGISTRATION

## 35th International Symposium on Ultrasonic Imaging and Tissue Characterization

May 17 – 19, 2010  
Holiday Inn Rosslyn @ Key Bridge  
Arlington, VA

The annual International Symposia on Ultrasonic Imaging and Tissue Characterization have long been recognized as being one of the world's leading forums concerned with ultrasonic technology for medical applications. Fifty-five technical contributions will be presented this year. Many of the presentations will deal with clinical evaluation of novel methodologies and instrumentation for tissue characterization.

The program includes sessions on cardiac imaging/ARFI (acoustic radiation force imaging), tissue parameters/contrast, HIFU (high intensity focused ultrasound), bone, ARFI/elasticity and imaging, as well as four special sessions. In one special session, NIH representatives will discuss current proposal-review policies and procedures and research-funding opportunities at their agency. The other three sessions are technical and will present overviews on intravascular ultrasound, ultrasound computed tomography and advanced transducer technology.

### CHAIRMAN

**Ernest J. Feleppa**  
*Riverside Research Institute, New York*

### CO-CHAIRMAN

**James G. Miller**  
*Washington University in St. Louis*

### EXECUTIVE CHAIRMAN

**Melvin Linzer**

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## PROGRAM

### MONDAY, MAY 17

7:30 a.m. **Registration/Coffee and Pastry**

8:30 a.m. **Introduction**  
Ernest J. Feleppa, *Symposium Chairman*

8:35 a.m. **1. CARDIAC IMAGING/ARFI**  
Chmn: Gregg E. Trahey, *Duke U.*

1.1 **Assessment of cardiac dysfunction in overweight adolescents using echocardiographic-based 'whole heart' global longitudinal strain analyses**, Mark R. Holland, Bernadette Vitola, Samuel Klein, Timothy J. Sekarski, James G. Miller and Gautam K. Singh, *Washington U. in St. Louis*

1.2 **A Bayesian parameter estimation approach for enhancement of the analysis of myocardial strain and strain rate data**, Christian C. Anderson, Christopher W. Lloyd, G. Larry Bretthorst, Ravi Rasalingam, Gautam K. Singh, Mark R. Holland and James G. Miller, *Washington U. in St. Louis*

1.3 **Backscatter from tissue-mimicking phantoms exhibiting a range of lipid concentrations comparable to that observed in the hearts of obese subjects**, Benjamin L. Johnson, Joseph J. Hoffman, Jean E. Schaffer, Linda R. Peterson, Gautam K. Singh, Mark R. Holland and James G. Miller, *Washington U. in St. Louis*

1.4 **Rapid acquisition of cardiovascular elasticity and blood-flow information using a combined ARFI/Doppler imaging system**, D.M. Dumont, J. J. Dahl, S. J. Hsu and G.E. Trahey, *Duke U.*

1.5 **Elasticity measurements through the cardiac cycle using acoustic radiation force impulse imaging (ARFI) on an intracardiac echocardiography (ICE) transducer**, Peter J.

Hollender, Stephen J. Hsu, Richard R. Bouchard, David P. Bradway, Patrick D. Wolf and Gregg E. Trahey, *Duke U.*

**1.6 Acoustic radiation force-driven assessment of myocardial elasticity**, Richard Bouchard, Stephen Hsu, Mark Palmeri, Ned Rouze and Gregg Trahey, *Duke U.*

10:05 a.m. **Coffee**

10:45 a.m.

**1.7 In vivo and in vitro investigation of shear wave velocity anisotropy in myocardial tissue**, Richard Bouchard, Benjamin Maimon, Daniel Haughton, Yuan Long, Stephen Hsu and Gregg Trahey, *Duke U.*

**1.8 Acoustic radiation force impulse imaging of acute myocardial ischemia and infarct**, David P. Bradway, Stephen J. Hsu, Patrick D. Wolf and Gregg E. Trahey, *Duke U.*

**1.9 Integration of intracardiac acoustic radiation force impulse imaging with electro-anatomic mapping for in vivo visualization of radiofrequency ablation lesions**, Patrick D. Wolf, Tristram D. Bahnson, Stephanie A. Eyerly, Stephen J. Hsu, David P. Bradway and Gregg E. Trahey, *Duke U.*

**1.10 Direct visualization of canine cardiac-ablation lesions — comparisons between ARFI, strain and strain-rate imaging**, Brett Byram, Stephen Hsu, Patrick Wolf and Gregg E. Trahey, *Duke U.*

**1.11 Extrapolative and interpolative methods for modeling short-time cardiac motion estimated from ultrasonic data, with applications to cardiac ARFI**, Brett Byram, Doug Giannantonio, Douglas Dumont and Gregg E. Trahey, *Duke U.*

12:00 p.m. **Lunch**

2:00 p.m. **2. TISSUE PARAMETERS/CONTRAST**  
Chmn: Ernest J. Feleppa, *Riverside Res. Inst.*

**2.1 Ultrasonic backscatter coefficient quantitative estimates from chinese hamster ovary cell pellet biophantoms**, Aiguo Han, Maxime Teisseire, Rami Abuhabsah, James P. Blue, Jr., Sandhya Sarwate and William D. O'Brien, Jr., *U. Illinois at Urbana-Champaign and École Centrale de Lille, France*

**2.2 Ultrasonic backscatter coefficient measurement agreement across multiple imaging platforms**, Lauren

A. Wirtzfeld, Goutam Ghoshal, Kibo Nam, Yassin Labyed, Janelle J. Anderson, Alexander Haak, Zhi He, Rita J. Miller, Sandhya Sarwate, Douglas G. Simpson, James A. Zagzebski, Timothy A. Bigelow, Michael L. Oelze, Timothy J. Hall and William D. O'Brien Jr., *U. Illinois at Urbana-Champaign, U. Wisconsin-Madison and Iowa State U. Ames, IA*

**2.3 A simulation study on spatial-distribution-dependent ultrasound backscattering of cell aggregates**, Ratan K. Saha and Michael C. Kolios, *Ryerson U., Toronto*,

**2.4 Effective scattering diameter estimates of rabbit liver via three-dimensional impedance map and quantitative ultrasound**, Alexander J. Dapore, Lauren A. Wirtzfeld, Sandhya Sarwate, Michael L. Oelze, Minh N. Do, Timothy J. Hall and William D. O'Brien, Jr., *U. Illinois at Urbana-Champaign and U. Wisconsin-Madison*

**2.5 Analysis of human fibroadenoma using three-dimensional impedance maps**, Alexander J. Dapore, Michael R. King, Sandhya Sarwate, Josephine Harter, Michael L. Oelze, Minh N. Do, Timothy J. Hall and William D. O'Brien, Jr., *U. Illinois at Urbana-Champaign and U. Wisconsin-Madison*

**2.6 Quantitative-ultrasound detection of metastases in dissected lymph nodes of cancer patients at 25 MHz**, Ernest J. Feleppa, Jonathan Mamou, Junji Machi, Masaki Hata, Emi Saegusa-Beecroft, Alain Coron, Eugene Yanagihara, Pascal Laugier and Michael L. Oelze, *Riverside Res. Inst., New York, U. Hawaii at Manoa, Honolulu, U. Pierre et Marie Curie and CNRS, Paris and U. Illinois at Urbana-Champaign*

**2.7 Specular echo detection using generalized spectrum parameters**, Adam Luchies and Michael L. Oelze, *U. Illinois at Urbana-Champaign*

3:45 p.m.. **Coffee**

4:30 p.m.

**2.8 Phantom tests of attenuation and backscatter determinations in a preclinical tumor model**, Kibo Nam, Lauren A. Wirtzfeld, Alexander Haak, Alexander D. Pawlicki, Goutam Ghoshal, Yassin Labyed, Timothy A. Bigelow, Michael L. Oelze, Ernest L. Madsen, James A. Zagzebski, William D. O'Brien Jr. and Timothy J. Hall, *U. Wisconsin-Madison, U. Illinois at Urbana-Champaign and Iowa State U., Ames*

**2.9 Comparison of attenuation measurements for live rat tumors using three clinical imaging systems**, Kibo Nam, Lauren A. Wirtzfeld, Alexander Haak, Alexander

D. Pawlicki, Goutam Ghoshal, Yassin Labyed, Timothy A. Bigelow, Michael L. Oelze, James A. Zagzebski, William D. O'Brien Jr and Timothy J. Hall, *U. Wisconsin-Madison, U. Illinois at Urbana-Champaign and Iowa State U., Ames*

**2.10 Limitation of attenuation slope estimation using spectral shift**, Alexander Haak, Alexander D. Pawlicki, Ernest L. Madsen, Timothy J. Hall and William D. O'Brien Jr, *U. Illinois at Urbana-Champaign and U. Wisconsin-Madison*

**2.11 Novel low-frequency ultrasound detection of apoptosis *in vitro* and *in vivo***, Gregory J. Czarnota, Anuja Giles, Ervis Sofroni, Naum Papanicolau, Sara Iraj, Rebecca Dent, Jacqueline Spayne and Michael C. Kolios, *Sunnybrook Health Sciences Centre, U. Toronto and Ryerson U., Toronto*

**2.12 High-frequency characterization of atherosclerotic arteries with targeted contrast agents**, Pavlos Anastasiadis and John S. Allen, *U. Hawaii at Manoa, Honolulu*

**2.13 Ultrasound microbubbles-mediated gene transfer into the ocular ciliary muscle**, Michèle Boudinet, Laura Kowalczyk, Amena Saïed, Francine Behar-Cohen and Pascal Laugier, *CNRS and Ctr. Recherche des Cordeliers, Paris*

6:00 p.m. **Adjourn**

7:00 – 9:00 p.m. **Cocktail Reception**  
Club Room

## TUESDAY, MAY 18

7:30 a.m. **Coffee and Pastry**

8:30 a.m. **3. IVUS**  
Chmn: James G. Miller, *Washington U.*  
Itsik Ben-Dor, *Washington Hosp. Ctr.*

**3.1 Clinical perspective on the role of intravascular ultrasound (IVUS) imaging and tissue characterization in the coronary arteries**, Itsik Ben-Dor, *Washington Hosp. Ctr., Washington, DC* (invited overview)

**3.2 Challenges in atherosclerotic plaque characterization using intravascular ultrasound**, Shashidhar Sathyanarayana, Wenguang Li and Lewis Thomas, *Boston Scientific Corp., Fremont, CA* (invited)

**3.3 VHT<sup>TM</sup> intravascular ultrasound: limitations, validation and clinical data**, Anuja Nair, Russell J. Fedewa, M.

Pauliina Margolis and D. Geoffrey Vince, *Volcano Corporation, San Diego* (invited)

**3.4 Effect of angle of insonification on apparent backscatter from human coronary arteries**, Joseph J. Hoffman, Benjamin L. Johnson, Mark R. Holland, Russell J. Fedewa, Anuja Nair and James G. Miller, *Washington U. in St. Louis and Volcano Corporation, San Diego*

9:45 a.m. **4. HIFU**  
Chmn: Michael L. Oelze, *U. Illinois*

**4.1 Temperature-dependent ultrasonic characterization of biological media**, Goutam Ghoshal and Michael L. Oelze, *U. Illinois at Urbana-Champaign*

**4.2 Temperature imaging during nonuniform tissue heating with ultrasonic backscatter energy using self-calibration**, R. M. Arthur, D. Basu, Y. Guo, J.W. Trobaugh, W. L. Straube and E. G. Moros, *Washington U. in St. Louis and U. Arkansas, Little Rock, AK*

10:15 a.m. **Coffee**

10:50 a.m.  
**4.3 Optoacoustic characterization of HIFU-induced thermal lesions in live and excised tissues**, Parag V. Chitnis, Peter Brecht, Richard Su and Alexander Oraevsky, *Riverside Res. Inst., New York and Fairway Medical Technologies, Houston*

**4.4 Quantitative ultrasound assessment of HIFU-induced lesions in liver**. Jeremy Kemmerer and Michael Oelze, *U. Illinois at Urbana-Champaign*

11:20 p.m. **5. BONE**  
Chmn: Brent Hoffmeister, *Rhodes Coll.*

**5.1 Ultrasonic backscatter measurements of cancellous bone with and without an intervening layer of cortical bone**, Brent K. Hoffmeister, Andrew P. Holt and Sue C. Kaste, *Rhodes Coll. and St. Jude Children's Res. Hosp., Memphis*

**5.2 Multimode wave propagation in bovine cortical bone: parameter estimation using Bayesian probability theory**, Christian C. Anderson, Takaaki Koizumi, Tomohiro Nakatsuji, Keisuke Yamashita, Mami Matsukawa, Mark R. Holland, G. Larry Bretthorst and James G. Miller, *Washington U. in St. Louis and Doshisha U., Kyoto, Japan*

5.3 **Decomposition of two-component pulses: simulation and phantom experiment**, Keith A. Wear, *Food and Drug Administration*

12:05 p.m. **Lunch**

1:45 p.m. **6. REVIEW, PRIORITIES AND FUNDING OF NIH PROGRAMS**

Chmn: Ernest J. Feleppa, *Riverside Res. Inst.*

6.1 **NIH/NCI**, Houston Baker, *Program Director, Imaging Technology Development Branch, Cancer Imaging Program, National Cancer Institute, NIH* (invited)

6.2 **NIH/NIBIB**, Hector Lopez, *Program Director, Division of Applied Science and Technology, National Institute for Biomedical Imaging and Bioengineering, NIH* (invited)

2:45 p.m. **PANEL DISCUSSION**

Moderator: James G. Miller, *Washington U.*

3:15 p.m. **7. ARFI/ELASTICITY**

Chmn: Caterina Gallippi, *U. North Carolina*

7.1 **Acoustic radiation force assessment of muscular mechanical properties in a crossbred dystrophin-deficient, myostatin-null canine model**, Mallory R. Scola, Joe N. Kornegay and Caterina M. Gallippi, *U. North Carolina at Chapel Hill*

7.2 **ARFI discrimination of renal fibrosis**, Mallory R. Scola, So Yoon Jang, Randy K. Detwiler, Timothy C. Nichols, Wui K. Chong, Lauren M. Brubaker, Melissa C. Caughey, Melrose W. Fisher, Sonya Whitehead and Caterina M. Gallippi, *U. North Carolina at Chapel Hill*

3:45 p.m. **Coffee**

4:15 p.m.

7.3 **Comparison of beam sequence performance in an atherosclerosis-mimicking phantom**, Russell H. Behler, Timothy C. Nichols, Elizabeth P. Merricks and Caterina M. Gallippi, *U. North Carolina at Chapel Hill*

7.4 **GPU-based real-time displacement estimation for acoustic radiation force impulse images**, Stephen J. Rosenzweig, Mark L. Palmeri and Kathryn R. Nightingale, *Duke U.*

7.5 **Measurement of thermally-induced variation in liver shear modulus**, Etana Elegbe and Stephen McAleavey, *U. Rochester*

7.6 **Ultrasonic characterization of tissue properties and blood flow in myofascial pain syndromes**, Sidhartha Sikdar, Jay P. Shah, Tadesse Gebreab, Robin Ortiz and Lynn H. Gerber, *George Mason U., Fairfax, VA and National Institutes of Health*

7.7 **A finite-element modeling of prostate deformation for elastography**, S. Kaisar Alam, Shaoting Zhang, Dimitris Metaxas and Ernest J. Feleppa, *Riverside Res. Inst., New York and Rutgers U., New Brunswick, NJ*

7.8 **Prostate tissue characterization by ultrasound spectral methods and elastography**, Ervis Sofroni, Naum Papanicolau, Sara Iraj, Martin Yaffe, Hans Chung and Gregory J. Czarnota, *Sunnybrook Health Sciences Centre and U. Toronto*

5:45 p.m. **8. IMAGING**

Chmn: J. Mamou, *Riverside Res. Inst.*

8.1 **Sources and characterization of ultrasonic imaging clutter using a nonlinear, full-wave simulation method**, Jeremy Dahl and Harshwardhan Deshpande, *Duke U.*

8.2 **Progress towards high-frequency annular-array imaging in real-time**, Erwan Filoux, Orlando Aristizabal, Jonathan Mamou and Jeffrey A. Ketterling, *Riverside Res. Inst., New York*

6:15 p.m. **Adjourn**

## WEDNESDAY, MAY 19

7:30 a.m. **Coffee and Pastry**

8:30 a.m. **9. ULTRASOUND COMPUTED TOMOGRAPHY**

Chmn: Michael P. Andre, *U. California*

9.1 **Progress in ultrasound computed tomography**, Michael P. Andre, *U. California, San Diego* (invited overview)

9.2 **3D USCT II: Prototype for 3D data acquisition with a semi-ellipsoidal aperture**, N.V. Ruiters, M. Zapf and H. Gemmeke, *Karlsruhe Inst. Tech., Karlsruhe, Germany* (invited)

9.3 **Tomographic density imaging**, Roberto J. Lavarello and Michael L. Oelze, *U. Illinois at Urbana-Champaign* (invited)

9.4 **Breast imaging with ultrasound tomography: clinical results at the Karmanos Cancer Institute**, Neb Duric, Peter Littrup, Cuiping Li, Lisa Bey-Knight, Olsi Rama, Steve Schmidt, Lukasz Myc, Mark Sak, Bryan Ranger, Jessica Lupinacci and Erik West, *Wayne State U., Detroit* (invited)

9.5 **Ultrasonic breast-mimicking phantom for pulse-echo and transmission imaging**, Sumedha P. Sinha, Ernest L. Madsen, Gary R. Frank, Paul L. Carson and Mitchell M. Goodsitt, *U. Michigan, Ann Arbor and U. Wisconsin-Madison*

10:05 a.m. **Coffee**

10:40 a.m. **10. ADVANCED TRANSDUCER TECHNOLOGY**

Chmn: Jesse T. Yen, *U. Southern California*

10.1 **Transducers for 3-D imaging**, Jesse T. Yen, *U. Southern California, Los Angeles* (invited overview)

10.2 **Design, integration and use of special ultrasonic transducers for therapeutic guidance and diagnosis**, D.N. Stephens, J. Cannata, C.H. Seo, J.S. Jeong, A. Nikoozadeh, O. Oralkan, P. Khuri-Yakub, A. DeLaRama, T. Nguyen, A. Dentinger, F. Lin, K. Thomenius, K. Shung, K. Shivkumar, A. Mahajan, M. O'Donnell, U. Truong and D. Sahn, *U. California, Davis, U. Southern California, U. Washington, Stanford U., St. Jude Medical, GE Corporate Research & Development, U. California, Los Angeles and Oregon Health and Sciences U.* (invited)

10.3 **Forward-looking intracardiac echocardiography catheters using capacitive micromachined ultrasonic transducers**, Amin Nikoozadeh, Ömer Oralkan, Mustafa Gencel, Jung Woo Choe, Douglas N. Stephens, Alan de la Rama, Peter Chen, Kai Thomenius, Aaron Dentinger, Douglas Wildes, Kalyanam Shivkumar, Aan Mahajan, Matthew O'Donnell, David Sahn and Pierre T. Khuri-Yakub, *Stanford U., U. California, Davis, St. Jude Medical, Irvine, G.E. Global Research, Niskayuna, NY, U. California, Los Angeles, U. Washington, Seattle and Oregon Health and Science U., Portland, OR* (invited)

10.4 **Imaging arrays with improved transmit power capability**, M. J. Zipparo, K. F. Bing and K. R. Nightingale, *W. L. Gore and Associates Inc., Englewood, Georgia Tech Res. Inst., Atlanta and Duke U.* (invited)

10.5 **Micromachined single crystal 1-3 composite transducers**, X. Jiang and S. Zhang, *North Carolina State U., Raleigh, and Pennsylvania State U., University Park* (invited)

12:00 p.m. **Adjourn**

## GENERAL INFORMATION

### REGISTRATION

All attendees are charged a registration fee to help defray the costs of conducting the Symposium. The general registration fee is \$400 (\$425 if postmarked after **May 3**). Graduate students who identify their school and advisor on the registration card will be charged \$210 (\$225 after **May 3**).

Advance registration is requested in order to complete local arrangements. Please send the registration card on the next page along with your registration fee (checks made payable to "Tissue Characterization Symposium," *no purchase orders, please*) to:

**Symposium on Ultrasonic Imaging and Tissue Characterization**

2 Fulham Court  
Silver Spring, MD 20902

Checks must be in U.S. dollars and drawn on a U.S. bank. Add a \$30 processing fee if the check is not drawn on a U.S. bank.

You can pay by credit card for an additional \$20.00 fee (\$10 additional for student registration). Please mail the registration card with your credit card number and expiration date to the above address or fax it to (301) 649-3447. *Dynamedia* will be noted as the payee on your credit card statement.

Late registration will be held at the Holiday Inn Rosslyn @ Key Bridge beginning at 7:30 a.m. on Monday, May 17.

### HOTEL

The Holiday Inn Rosslyn @ Key Bridge, 1900 N. Fort Myer Drive, Arlington, Virginia, 22209, will be the headquarters hotel for all meeting activities. The hotel is located only a short walk from Georgetown and one block from the Metro subway stop at Rosslyn Station, placing it within minutes of the major tourist attractions in Washington, DC. Hotel amenities include a business center, wireless internet connection, parking, indoor swimming pool and a fitness center.

Registrants are urged to contact the hotel directly, either by mail or fax (703- 522-8864), using the enclosed registration card. *The card must be received by April 14 to ensure accommodations at the hotel and to ensure receiving the special Symposium rate.* You may also call (800-368-3408; 703-807-2000). If you do so, refer to Group Code **T10** and give times of

arrival/departure, smoking or nonsmoking preference and credit card guarantee. The special rate will be honored for those wishing to extend their stay at the hotel.

## **SOCIAL PROGRAM**

A social program is planned to provide an opportunity for informal contacts and discussion among the participants. This will include the official Symposium cocktail reception on Monday evening, May 17. Additional tickets for guests will be available at the registration desk.

## **TRANSPORTATION**

The Holiday Inn Rosslyn @ Key Bridge is conveniently located one block from the Washington Metro stop at Rosslyn Station. Travelers arriving at National Airport may board the Metro at the Airport. The hotel is also serviced by shuttle service from National and Dulles Airports. Free parking in the hotel garage is provided for guests of the hotel.

## **FOR ADDITIONAL INFORMATION, contact:**

Dr. Melvin Linzer, *Executive Chairman*  
**Symposium on Ultrasonic Imaging  
and Tissue Characterization**  
2 Fulham Court  
Silver Spring, MD 20902

*Phone:* (301) 649-6886 *Fax:* (301) 649-3447  
*Email:* mlinzer@verizon.net

## SYMPOSIUM AND HOTEL REGISTRATION FORMS

### SYMPOSIUM REGISTRATION FORM

#### 35th International Symposium on Ultrasonic Imaging and Tissue Characterization

Holiday Inn Rosslyn @ Key Bridge, Arlington, VA      May 17 – 19, 2010

Please return as soon as possible to assist us with planning for the Symposium.

**Mail to:** *Symposium on Ultrasonic Imaging and Tissue Characterization*, 2 Fulham Court, Silver Spring, MD 20902

Name \_\_\_\_\_

Organization \_\_\_\_\_

Street Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Telephone \_\_\_\_\_ Fax \_\_\_\_\_ Email \_\_\_\_\_

Registration fee enclosed (\$400) (If postmarked after **May 3**, fee is \$425)

*See REGISTRATION on previous page*

Graduate student registration fee enclosed (\$210) (After **May 3**, fee is \$225)

*for payment instructions .*

\_\_\_\_\_  
Faculty Advisor

\_\_\_\_\_  
Telephone

\_\_\_\_\_  
Email

### HOTEL RESERVATION FORM

**GROUP CODE T10**

**Please mail to:** Reservation Office, Holiday Inn Rosslyn @ Key Bridge, 1900 N. Fort Myer Drive, Arlington, VA 22209

*Phone: (800) 368-3408; (703) 807-2000    Fax: 703-522-8864*

**Room rate is \$195.00 single or double, plus 10.25% tax. Please refer to Group Code T10 when contacting the hotel.**

PLEASE PRINT OR TYPE

Arrival date \_\_\_\_\_ Time \_\_\_\_\_ a.m/p.m.

Please reserve \_\_\_\_\_ room(s) for \_\_\_\_\_ person(s)

Departure date \_\_\_\_\_ (Checkout time: 12 p.m.)

Nonsmoking     Smoking

Remarks \_\_\_\_\_

\_\_\_\_\_  
First name      Initial      Last name

**IMPORTANT:** *To guarantee your reservation beyond 6 p.m., please enclose deposit to cover first night's stay OR check the following:*

\_\_\_\_\_  
Address

Please guarantee with my credit card

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