



Herman Winick

Professor of Applied Physics (Research), Emeritus

 Curriculum Vitae available Online

 Resume available Online

CONTACT INFORMATION

- **Alternate Contact Administrative Contact**

Stephanie Carlson - Business Manager at Stanford Linear Accelerator Center

Email steph@slac.stanford.edu

Tel (650) 926-2033

Bio

BIO

Born and educated in New York City, he received his AB (1953) and his PhD (1957) from Columbia University. Following a postdoc position at the University of Rochester (1957-59) he continued work in high energy physics and accelerator development at the Cambridge Electron Accelerator at Harvard University (1959-73), serving as Assistant Director. He came to Stanford in 1973 to lead the technical design of the Stanford Synchrotron Radiation Project (SSRP), now SSRL, and served as Deputy Director of the laboratory until his semi-retirement in 1998 (www-ssrl.slac.stanford.edu). He has taught physics at Columbia, Rochester, Harvard, MIT, Northwestern, University of Massachusetts, and Stanford. His 1970's and 1980's research developing periodic magnet systems (wigglers and undulators), had a major impact on synchrotron radiation sources and research facilities at Stanford and around the world. Beginning in 1992 he made major contributions to initiating and developing the Linac Coherent Light Source (LCLS), the world's first X-ray Free Electron Laser. Starting operation in 2009, the LCLS has shifted the major SLAC focus from high energy physics to x-ray sources and research. In 1997 he suggested SESAME, a synchrotron light source involving 9 countries in the Middle East. He has played a major role in the development of this project, on track to start research in 2016 (www.sesame.org.jo). He is now promoting a similar project in Africa. Throughout his adult life he has been an activist in helping dissidents and protecting academic freedom and human rights.

ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Applied Physics

HONORS AND AWARDS

- Phi Beta Kappa, Columbia University (1953)
- Sr. Scientist Award, Alexander von Humboldt Society (1986)
- Significant Implication for Energy Related Technology, US Dept of Energy (1987)
- Fellowship, American Physical Society (1987)
- Fellowship, AAAS (1995)
- Prize for Achievement in Accelerator Physics, US Particle Accelerator School (1995)
- Distinguished Associate Award, US Dept of Energy (2000)
- Heinz R. Pagels Human Rights Award, New York Academy of Sciences (2005)
- Sakharov Prize, American Physical Society (2010)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Numerous advisory Committees, SRRRC Taiwan; BESSY II in Berlin; ALS in Berkeley; SESAME in Jordan; African Light Source; Mexican Light Source; CAMD facility Baton Rouge LA; Beijing, Hefei and Shanghai synchrotron light sources; (1984 - present)

PROFESSIONAL EDUCATION

- PhD, Columbia University , Physics (1957)
- AB, Columbia University , Physics (1953)

Publications

PUBLICATIONS

- **Synchrotron light sources in developing countries; sesame and others**
Winick, H.
AMER CHEMICAL SOC.2018
- **Synchrotron light sources in developing countries** *MODERN PHYSICS LETTERS A*
Mtingwa, S. K., Winick, H.
2018; 33 (9)
- **SESAME - A 3(rd) generation synchrotron light source for the Middle East** *SYNCHROTRON RADIATION INSTRUMENTATION, PTS 1 AND 2*
Ulku, D., Rahighi, J., Winick, H.
2007; 879: 208-?
- **SESAME, a third generation synchrotron light source for the Middle East region** *9th International Symposium on Radiation Physics*
Einfeld, D., Hasnain, S. S., Sayers, Z., Schopper, H., Winick, H.
PERGAMON-ELSEVIER SCIENCE LTD.2004: 693-700
- **Future possibilities of the Linac Coherent Light Source** *JOURNAL OF SYNCHROTRON RADIATION*
Cornacchia, M., ARTHUR, J., Bane, K., Bolton, P., Carr, R., Decker, F. J., Emma, P., Galayda, J., Hastings, J., Hodgson, K., Huang, Z., LINDAU, I., Nuhn, et al
2004; 11: 227-238
- **SESAME: an extended spectral range synchrotron radiation facility in the Middle East based on an upgrade to BESSY I** *7th International Conference on Synchrotron Radiation Instrumentation (SRI 2000)*
Voss, G. A., Rabedeau, T., Raither, S., Schopper, H., Wehreter, E., Winick, H.
ELSEVIER SCIENCE BV.2001: 55-58
- **Transverse emittance measurements from a photocathode RF gun with variable laser pulse length** *20th International Free Electron Laser Conference 5th FEL User Workshop*
Reis, D. A., HERNANDEZ, M., Schmerge, J. F., Winick, H., Hogan, M. J.
ELSEVIER SCIENCE BV.1999: 341-46
- **Synchrotron radiation sources - Present capabilities and future directions** *6th International Conference on Synchrotron Radiation Instrumentation (SRI'97)*
Winick, H.
WILEY-BLACKWELL.1998: 168-175
- **Emittance measurements for the SLAC gun test facility** *17th Particle Accelerator Conference*
HERNANDEZ, M., Fisher, A., MEYERHOFER, D., Miller, R., Palmer, D. T., Park, S., Reis, D., Schmerge, J., Weaver, J., Wiedemann, H., Winick, H., Yeremian, D.
IEEE.1998: 2840-2842
- **Emittance studies of the BNL/SLAC/UCLA 1.6 cell photocathode RF gun** *17th Particle Accelerator Conference*
Palmer, D. T., Wang, X. J., Miller, R. H., Babzien, M., Ben-Zvi, I., Pellegrini, C., Sheehan, J., Skaritka, J., Winick, H., Woodle, M., Yakimenko, V.
IEEE.1998: 2687-2689
- **Fourth generation light sources** *17th Particle Accelerator Conference*
Winick, H.
IEEE.1998: 37-41

- **Early work with synchrotron radiation at Stanford** *JOURNAL OF SYNCHROTRON RADIATION*
Doniach, S., Hodgson, K., LINDAU, I., Pianetta, P., Winick, H.
1997; 4: 380-395
- **Initial commissioning results of the next generation photoinjector** *7th Workshop on Advanced Accelerator Concepts (AAC 96)*
Palmer, D. T., Wang, X. J., Miller, R. H., Babzien, M., BENZVI, I., Pellegrini, C., Sheehan, J., Skaritka, J., Winick, H., Woodle, M., Yakimenko, V.
AMER INST PHYSICS.1997: 695-704
- **Commissioning results of the BNL/SLAC/UCLA symmetrized 1.6 Cell S-Band emittance compensated photoinjector** *Conference on Free-Electron Laser Challenges*
Palmer, D. T., Wang, X. J., Miller, R. H., Babzien, M., BENZVI, I., Pellegrini, C., Sheehan, J., Skaritka, J., SRINIVASANRAO, T., Winick, H., Woodle, M., Yakimenko, V.
SPIE - INT SOC OPTICAL ENGINEERING.1997: 78-89
- **SLAC RF photocathode gun test facility** *Conference on Free-Electron Laser Challenges*
Schmerge, J. F., Reis, D. A., HERNANDEZ, M., Meyerhofer, D. D., Miller, R. H., Palmer, D. T., Weaver, J. N., Winick, H., Yeremian, D.
SPIE - INT SOC OPTICAL ENGINEERING.1997: 90-96
- **Research and development toward a 4.5-1.5 angstrom linac coherent light source (LCLS) at SLAC** *17th International Free Electron Laser Conference*
Tatchyn, R., ARTHUR, J., Baltay, M., Bane, K., Boyce, R., Cornacchia, M., Cremer, T., Fisher, A., Hahn, S. J., HERNANDEZ, M., Loew, G., Miller, R., Nelson, et al
ELSEVIER SCIENCE BV.1996: 274-83
- **Microwave measurements of the BNL/SLAC/UCLA 1.6 cell photocathode RF gun** *16th Biennial Particle Accelerator Conference*
Palmer, D. T., Miller, R. H., Winick, H., Wang, X. J., Batchelor, K., Woodle, M., BENZVI, I.
IEEE.1996: 982-984
- **Simulations of the BNL/SLAC/UCLA 1.6 cell emittance compensated photocathode RF gun low energy beam line** *16th Biennial Particle Accelerator Conference*
Palmer, D. T., Miller, R. H., Winick, H., Wang, X. J., Batchelor, K., Woodle, M., BENZVI, I.
IEEE.1996: 2432-2434
- **The linac coherent light source (LCLS): A fourth-generation light source using the SLAG linac** *JOURNAL OF ELECTRON SPECTROSCOPY AND RELATED PHENOMENA*
Winick, H.
1995; 75: 1-8
- **PARAMETRIC STUDY OF AN X-RAY FEL** *16th International Free Electron Laser Conference*
Travish, G., Fawley, W. M., Kim, K. J., Nuhn, H. D., Pellegrini, C., Winick, H., Xie, M.
ELSEVIER SCIENCE BV.1995: 60-63
- **THE LCLS - A 4TH-GENERATION LIGHT-SOURCE USING THE SLAG LINAC** *5th International Conference on Synchrotron Radiation Instrumentation*
ARTHUR, J., Materlik, G., Tatchyn, R., Winick, H.
AMER INST PHYSICS.1995: 1987-89
- **Microwave measurements and beam dynamics simulations of the BNL/SLAC/UCLA emittance compensated 1.6 cell photocathode RF gun** *Conference on Electron-Beam Sources and Charged-Particle Optics*
Palmer, D. T., Miller, R. H., Winick, H., Wang, X. J., Batchelor, K., Woodle, M., BENZVI, I.
SPIE - INT SOC OPTICAL ENGINEERING.1995: 514-526
- **SHORT-WAVELENGTH FELS USING THE SLAC LINAC** *8th National Conference on Synchrotron Radiation Instrumentation*
Winick, H., Bane, K., Boyce, R., Cobb, J., Loew, G., Morton, P., Nuhn, H. D., Paterson, J., Pianetta, P., Raubenheimer, T., Seeman, J., Tatchyn, R., Vylet, et al
ELSEVIER SCIENCE BV.1994: 199-205
- **HIGH-ENERGY SYNCHROTRON-RADIATION SOURCES** *16th International Conference on X-ray and Inner-Shell Process (X 93)*
Winick, H.
ELSEVIER SCIENCE BV.1994: 112-15
- **THE SLAC SOFT-X-RAY HIGH-POWER FEL** *15th International Free Electron Laser Conference*
Pellegrini, C., Rosenzweig, J., Travish, G., Bane, K., Boyce, R., Loew, G., Morton, P., Nuhn, H. D., Paterson, J., Pianetta, P., Raubenheimer, T., Seeman, J., Tatchyn, et al

ELSEVIER SCIENCE BV.1994: 326–30

- **Prospects for high power linac coherent light source (LCLS) development in the 1000 angstrom-1 angstrom wavelength range** *4th International Colloquium on X-Ray Lasers*
Tatchyn, R., Bane, K., Boyce, R., Loew, G., Miller, R., Nuhn, H. D., Palmer, D., Paterson, J., Raubenheimer, T., Seeman, J., Winick, H., Yeremian, D., Pellegrini, et al
AIP PRESS.1994: 320–29
- **A 2 TO 4NM HIGH-POWER FEL ON THE SLAC LINAC** *14TH INTERNATIONAL CONF ON FREE ELECTRON LASER (FEL 92)*
Pellegrini, C., Rosenzweig, J., Nuhn, H. D., Pianetta, P., Tatchyn, R., Winick, H., Bane, K., Morton, P., Raubenheimer, T., Seeman, J., Halbach, K., Kim, K. J., Kirz, et al
ELSEVIER SCIENCE BV.1993: 223–27
- **DESIGN CONSIDERATIONS FOR A 60-METER PURE PERMANENT-MAGNET UNDULATOR FOR THE SLAC LINAC COHERENT-LIGHT SOURCE (LCLS)** *1993 Particle Accelerator Conference*
Tatchyn, R., Boyce, R., Halbach, K., Nuhn, H. D., Seeman, J., Winick, H., Pellegrini, C.
I E E E.1993: 1608–1610
- **LINAC COHERENT-LIGHT SOURCE (LCLS) AT 2-4 NM USING THE SLAC LINAC** *Conference on Electron-Beam Sources of High-Brightness Radiation*
Seeman, J. T., Bane, K., Boyce, R., Loew, G., Morton, P., Nuhn, H. D., Paterson, J., Pianetta, P., Raubenheimer, T., Tatchyn, R., Vylet, V., Winick, H., Pellegrini, et al
SPIE - INT SOC OPTICAL ENGINEERING.1993: 116–125
- **SHORT WAVELENGTH FELS ON LARGE STORAGE-RINGS** *7TH NATIONAL CONF ON SYNCHROTRON RADIATION INSTRUMENTATION*
Nuhn, H. D., Tatchyn, R., Winick, H., Fisher, A. S., Gallardo, J. C., Pellegrini, C.
ELSEVIER SCIENCE BV.1992: 89–96
- **40 ANGSTROM FEL DESIGNS FOR THE PEP STORAGE RING** *13TH INTERNATIONAL CONF ON FREE ELECTRON LASER*
Fisher, A. S., Gallardo, J. C., Nuhn, H. D., Tatchyn, R., Winick, H., Pellegrini, C.
ELSEVIER SCIENCE BV.1992: 730–35
- **SSRL 1990 - STATUS AND FUTURE-PLANS** *9TH USSR NATIONAL CONF ON SYNCHROTRON RADIATION UTILIZATION (SR 90)*
Tatchyn, R., Winick, H.
ELSEVIER SCIENCE BV.1991: 13–23
- **CONCEPTUAL DESIGN OF INSTRUMENTATION TO MEASURE THE DIFFRACTION PROFILE OF A SINGLE-CRYSTAL AT BRAGG ANGLE NEAR π -2 BY USING SYNCHROTRON RADIATION** *6TH NATIONAL CONF ON SYNCHROTRON RADIATION INSTRUMENTATION*
CATICHAELLIS, S., Boyce, R., Winick, H.
ELSEVIER SCIENCE BV.1990: 132–34
- **THE USE OF A SINGLE WAVELENGTH WIGGLER IN PEP AS A CIRCULAR POLARIZED HARD X-RAY SOURCE** *6TH NATIONAL CONF ON SYNCHROTRON RADIATION INSTRUMENTATION*
Sasaki, S., Youngman, B., Winick, H.
ELSEVIER SCIENCE BV.1990: 401–7
- **OVERVIEW OF SYNCHROTRON RADIATION FACILITIES OUTSIDE THE USA** *6TH NATIONAL CONF ON SYNCHROTRON RADIATION INSTRUMENTATION*
Winick, H.
ELSEVIER SCIENCE BV.1990: 487–92
- **PEP AS A SYNCHROTRON RADIATION SOURCE** *REVIEW OF SCIENTIFIC INSTRUMENTS*
Bienenstock, A., Brown, G., Wiedemann, H., Winick, H.
1989; 60 (7): 1393-1398
- **1ST UNDULATOR OPERATION AT SRC** *NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT*
Green, M. A., KELLY, M. K., Lai, B., OTTE, R. A., ROWE, E. M., Stott, J. P., Trzeciak, W. S., Wallace, D. J., WINTER, W. R., Cerrina, F., Margaritondo, G., Huber, D. L., Winick, et al
1988; 266 (1-3): 91-95

- **A MISSING-BENDING-MAGNET SCHEME FOR PEP** *NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT*
Liu, R. Z., Winick, H.
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- **SYNCHROTRON RADIATION** *SCIENTIFIC AMERICAN*
Winick, H.
1987; 257 (5): 88-?
- **STATUS OF SYNCHROTRON RADIATION FACILITIES OUTSIDE THE USSR** *NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT*
Winick, H.
1987; 261 (1-2): 9-17
- **SULFUR K-EDGE X-RAY ABSORPTION STUDIES USING THE 54-POLE WIGGLER AT SSRL IN UNDULATOR MODE** *NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT*
Hedman, B., Frank, P., PENNERHAHN, J. E., Roe, A. L., Hodgson, K. O., Carlson, R. M., Brown, G., CERINO, J., HETTEL, R., TROXEL, T., Winick, H., Yang, J.
1986; 246 (1-3): 797-800
- **OPTICAL AND SPECTRAL CHARACTERISTICS OF AN INSERTION DEVICE USED BOTH AS A WIGGLER AND AN UNDULATOR** *NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT*
Brennan, S., COWAN, P. L., Jach, T., Lavilla, R., Perera, R. C., Winick, H.
1986; 246 (1-3): 37-40
- **A LOW EMITTANCE CONFIGURATION FOR SPEAR** *IEEE TRANSACTIONS ON NUCLEAR SCIENCE*
BLUMBERG, L. N., Harris, J., Stege, R., CERINO, J., HETTEL, R., Hofmann, A., Liu, R. Z., Wiedemann, H., Winick, H.
1985; 32 (5): 3433-3435
- **WORLDWIDE CENSUS OF SYNCHROTRON RADIATION FACILITIES** *NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT*
Winick, H., Watson, R. E.
1984; 222 (1-2): 373-409
- **UNDULATOR STUDIES AT SSRL** *NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH*
Winick, H., Boyce, R., Brown, G., Hower, N., Hussain, Z., PATE, T., Umbach, E.
1983; 208 (1-3): 127-137
- **AN ALL WIGGLER AND UNDULATOR SYNCHROTRON RADIATION SOURCE** *IEEE TRANSACTIONS ON NUCLEAR SCIENCE*
Winick, H., Wiedemann, H., LINDAU, I., Hodgson, K., Halbach, K., CERINO, J., Bienenstock, A., Bachrach, R.
1983; 30 (4): 3097-3099
- **THE BEAM LINE-VI REC-STEEL HYBRID WIGGLER FOR SSRL** *IEEE TRANSACTIONS ON NUCLEAR SCIENCE*
Hoyer, E., Chan, T., CHIN, J. W., Halbach, K., Kim, K. J., Winick, H., Yang, J.
1983; 30 (4): 3118-3120
- **A NEW WIGGLER BEAM LINE FOR SSRL** *NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH*
Hoyer, E., Bahr, C., Chan, T., Chin, J., Elioff, T., Halbach, K., Harnett, G., Humphries, D., HUNT, D., Kim, K. J., Lauritzen, T., Lindle, D., Shirley, et al
1983; 208 (1-3): 117-125
- **SYNCHROTRON RADIATION RESEARCH - AN OVERVIEW** *PHYSICS TODAY*
Bienenstock, A., Winick, H.
1983; 36 (6): 48-?
- **WIGGLER AND UNDULATOR MAGNETS - A REVIEW** *NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH*
Brown, G., Halbach, K., Harris, J., Winick, H.
1983; 208 (1-3): 65-77
- **THE OPTIMIZATION OF UNDULATORS FOR SYNCHROTRON RADIATION** *NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH*
Brown, G., Winick, H., Eisenberger, P.

- 1983; 204 (2-3): 543-547
- **WIGGLER AND UNDULATOR MAGNETS - AN OVERVIEW** *NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH*
Winick, H., Brown, G.
1982; 195 (1-2): 347-348
 - **A PERMANENT-MAGNET UNDULATOR FOR SPEAR** *IEEE TRANSACTIONS ON NUCLEAR SCIENCE*
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1981; 28 (3): 3136-3138
 - **WIGGLER AND UNDULATOR MAGNETS** *PHYSICS TODAY*
Winick, H., Brown, G., Halbach, K., Harris, J.
1981; 34 (5): 50-?
 - **WIGGLER MAGNETS AT SSRL - PRESENT EXPERIENCE AND FUTURE-PLANS** *NUCLEAR INSTRUMENTS & METHODS*
Winick, H., Spencer, J. E.
1980; 172 (1-2): 45-53
 - **INITIAL OPERATION OF SSRL WIGGLER IN SPEAR** *IEEE TRANSACTIONS ON NUCLEAR SCIENCE*
Berndt, M., Brunk, W., Cronin, R., Jensen, D., Johnson, R., King, A., Spencer, J., Taylor, T., Winick, H.
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 - **SSRL - PAST EXPERIENCE, PRESENT DEVELOPMENT, FUTURE-PLANS** *IEEE TRANSACTIONS ON NUCLEAR SCIENCE*
Winick, H.
1979; 26 (3): 3798-3800
 - **SYNCHROTRON RADIATION RESEARCH AT SSRP** *KVANTOVAYA ELEKTRONIKA*
Winick, H., Csonka, P. L.
1978; 5 (8): 1754-1758
 - **STANDARD WIGGLER MAGNETS** *NUCLEAR INSTRUMENTS & METHODS*
Winick, H., Helm, R. H.
1978; 152 (1): 9-15
 - **SYNCHROTRON RADIATION RESEARCH** *ANNUAL REVIEW OF NUCLEAR AND PARTICLE SCIENCE*
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 - **SYNCHROTRON RADIATION RESEARCH - RECENT DEVELOPMENTS** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY*
LINDAU, I., Winick, H.
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 - **STUDY OF SPEAR AS A DEDICATED SOURCE OF SYNCHROTRON RADIATION** *IEEE TRANSACTIONS ON NUCLEAR SCIENCE*
CERINO, J., GOLDE, A., Hastings, J., LINDAU, I., SALSBURG, B., Winick, H., Lee, M., Morton, P., Garren, A.
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 - **X-RAY RESONANT RAMAN-SCATTERING - OBSERVATION OF CHARACTERISTIC RADIATION NARROWER THAN LIFETIME WIDTH** *PHYSICAL REVIEW LETTERS*
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 - **RESONANT X-RAY RAMAN-SCATTERING STUDIES USING SYNCHROTRON RADIATION** *PHYSICAL REVIEW B*
Eisenberger, P., Platzman, P. M., Winick, H.
1976; 13 (6): 2377-2380
 - **SYNCHROTRON RADIATION AS A NEW TOOL WITHIN PHOTON-BEAM TECHNOLOGY** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY*
Doniach, S., LINDAU, I., SPICER, W. E., Winick, H.
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 - **DESIGN AND PERFORMANCE OF STANFORD SYNCHROTRON RADIATION PROJECT (SSRP)** *IEEE TRANSACTIONS ON NUCLEAR SCIENCE*

BAER, A. D., Gaxiola, R., GOLDE, A., Johnson, F., SALSBURG, B., Winick, H., Baldwin, M., Dean, N., Harris, J., Hoyt, E., Humphrey, B., JUROW, J., Melen, et al
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