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| Soggetti                | Lasers<br>Photonics<br>Electronics<br>Microelectronics<br>Atoms<br>Physics<br>Optics, Lasers, Photonics, Optical Devices<br>Electronics and Microelectronics, Instrumentation<br>Atoms and Molecules in Strong Fields, Laser Matter Interaction  |
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| Note generali           | Description based upon print version of record.  |
| Nota di bibliografia    | Includes bibliographical references and index.   |
| Nota di contenuto       | Coherent Pulses from Seeded Free-Electron Laser in the Extreme Ultraviolet -- Enhancement of Efficiency of XUV Generation in Atomic Gases Irradiated by Intense Laser Fields -- All-Optical Raman XFEL, Based on the Electron Emission in a Transverse High Intensity Optical Lattice -- Optical Transforms Related to Coherent Imaging of Inclined Objects -- Soft X-Ray Lasing Down to 6.85 nm in Ni-like Samarium -- Fourier Optical Study of Traveling-Wave Excitation at Short-Wavelength Plasma-Lasing -- Coherent Short-Wavelength Plasma Radiation for Lab-Scale Nano-Inspection tools -- Ion Temperature and Cross-Relaxation Effects on OFI Soft-X-Ray Laser -- Study of Particle Correlation Effects on Line Profiles of Ni-Like Collisional XUV Laser Amplification -- The LUNEX5 Project in France -- High Harmonic |

Generation Driven by Two Quasi-Collinear Pulses -- Real-Time Observation of Laser Heated Metals with High Brightness Monochromatic X-Ray Techniques at Present and Their Future Prospects -- Generation and Application of Coherent Radiation in the Water Window -- Time-Dependent Simulation of Carbon Illuminated by a High Intensity X-Ray Laser -- Regenerative Laser Cavity Tuning for Efficient Soft-X-Ray Laser Operation -- X-Ray Laser Developments at PHELIX -- Parabolic Equation and Exact Transparent Boundary Conditions in X-Ray Optics - Application to Waveguides and Whispering Gallery Optics -- Harmonic Generation and Soft-X-Ray Laser with LASERIX: Source Development, Applications and Advanced Diagnosis -- Observation of the Laser-Induced Surface Dynamics Using the Single-Shot X-Ray Laser Probe -- Nano-Meter Size Modification of Metal Surfaces Induced by Soft X-Ray Laser Single Pulse -- Speckle Statistics, Coherence and Polarization of a Collisional Soft X-Ray Laser -- Upscaling of X-Ray Laser Repetition of Rate Using an OPCPA Architecture -- Source Development of Novel Coherent X-Rays and Their Applications in JAEA -- Characterization of Zn X-Ray Laser at PALS Centre, Its Application in Dense Plasma Probing and Astrophysics -- Development of High Reflective Multilayer Mirrors at "Water Window" Wavelengths in IPOE -- Time Resolved Holography Scheme Using a Table Top Soft X-Ray Laser -- Plasma Homogenization for Overcoming Refractive Losses in X-Ray Laser -- Temporal Coherence and Spectral Linewidth of Neon-Like XUV Lasers Pumped in the Quasi-Steady State Regime -- Spectral Broadening of Ni-Like XUV Lines -- Visualization of Rapid Dynamic Interactions by Flash Soft X-Ray Microscopy -- Using the X-FEL to Understand X-Ray Thomson Scattering for Partially Ionized Plasmas -- Development of Soft X-Ray Microscopy Using Fresnel Zone Plate for Observation Laser-Induce Surface Dynamics -- 0.27 GW Soft X-Ray Pulse Using a Plasma-Based Amplification Chain -- Harmonic Generation in Argon by Femtosecond Ti:Sapphire Laser -- Demonstration of a 100 Hz Repetition Rate Soft X-Ray Laser and Gain-Saturated sub-10nm Table-Top -- Optical Correction of X-Ray Laser Illumination for Short-Wavelength Microscopy -- Repetitive XUV Discharge-Pumped Laser at 46.9 nm -- Line-Focus Generation for X-Ray Laser Pumping -- Critical Components for XUV Probing of Laser Driven Shocks -- High Density Optical-Field-Ionization Soft X-Ray Lasers -- Spectral Linewidth Measurement of a Ne-Like Ar Capillary Discharge Soft X-Ray Laser -- Defect Tolerant Talbot Nanopatterning -- Imaging in Nanoscale Using Laser-Plasma Sources of Extreme Ultraviolet (EUV) -- Experiments to Diagnose Plasma with a Soft X-Ray Laser Double-Frequency Grating Interferometry -- Heavy-Ion Spectroscopy with X-Ray Lasers at GSI.

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## Sommario/riassunto

These proceedings comprise of invited and contributed papers presented at the 13th International Conference on X-Ray Lasers (ICXRL 2012) which was held 11–15 June 2012 in Paris, in the famous Quartier Latin, inside the historical Center of Cordeliers. This conference is part of a continuing series dedicated to recent developments and applications of x-ray lasers and other coherent x-ray sources with attention to supporting technologies and instrumentation. New results in the generation of intense, coherent x-rays and progress towards practical devices and their applications are reported in these proceedings, including areas of research in plasma-based x-ray lasers, 4th generation accelerator-based sources and higher harmonic generation. Recent achievements related to the increase of the repetition rate up to 100 Hz and shorter wavelength collisional plasma-based soft x-ray lasers down to about 7 nm are presented. Seeding the amplifying plasma with a femtosecond high-order harmonic of infrared

laser was foreseen as the required breakthrough to break the picosecond frontier. Numerical simulations based on the Maxwell-Bloch model are presented in these proceedings, transposing the chirped pulse amplification technique to the x-ray domain in order to increase the time over which the femtosecond seed can be amplified. These proceedings also include innovative applications of soft x-ray lasers based on techniques and diagnostics relevant to topical domains such as EUV lithography, inertial confinement fusion, or warm dense matter physics.

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