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Soft X-ray emission from plasma channel created by wire explosion in water VACLAV PRUKNER, KAREL KOLACEK, JIRI SCHMIDT, OLEKSANDR FROLOV, JAROSLAV STRAUS, Institute of Plasma Physics, v.v.i., AS CR, Za Slovankou 3, 18200 Prague, INSTITUTE OF PLASMA PHYSICS, V.V.I., AS CR, ZA SLOVANKOU 3, 18200 PRAGUE TEAM — This year it was designed and built a new apparatus SHOW-WEX (SHOck Wave – Wire Explosion), which is designed as a soft X-ray source of coherent radiation with wavelength below 20 nm. The radiation will be produced in a plasma channel created by a wire explosion in a liquid where the proximity of liquid wall stabilizes plasma channel similarly as proximity of solid wall stabilizes a Z-pinch in a capillary. Moreover, if the pressure in a liquid is increased (or locally increased by focused shock wave, which is more efficient and a higher pressure can be reached), then the plasma expansion is slowed down, the stability of plasma is enhanced, and the requirements on the driver can be softened. The first experimental data on wire explosions i.e. time dependences of charging voltage, discharge current, and soft X-ray radiation emission (measured by vacuum photo diode) are presented.

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