

## **Optimization of x-ray pulse spatial structure and time profile during implosion of nested wire arrays**

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Experiments on the implosion of combined nested arrays (kapron-tungsten) [1] have demonstrated stable and compact compression of the plasma of the internal W array when a polymer fiber external array was used. The presence of substances with a low rate of plasma ablation at the periphery of the nested arrays leads to suppression of the development of magnetic Rayleigh – Taylor instability in the internal array. As a result, SXR pulses with the amplitude of 5–7TW and the duration about 5ns were obtained.

3D RMHD simulation of the combined nested arrays implosion was carried out. For calculations, we used the model of multicomponent EOS based on semiempirical data tables for individual components under the assumption of LTE [2]. The experimental results were confirmed theoretically. The optimization of stable Z-pinch compression is achieved due to the influence of a closed plasma shell between the arrays. The plasma of the shell is heated due to the action of a shock wave, drawing energy from the energy of the magnetic field of the current through the internal cascade.

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### References

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