

Abstract Submitted  
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**Wire array initiation at 1MA z-pinch ZEBRA** G.S. SARKISOV, Ktech Corp, V.V. IVANOV, T.E. COWAN, UNR, S.E. ROSENTHAL, K.W. STRUVE, SNL, A. MOROZOV, A. HABOUB, A. ASTANOVITSKIY, B. LA GALLOUDEC, UNR — The initial stage of W and Al wire array explosions on the 1MA z-pinch installation ZEBRA was investigated. Data from breakdown light emission, B-dot and axial/peripheral V-dots were obtained. Observation of the resistive voltage and the moment of corona generation allow calculation of the condition of the wire core after breakdown. With a current prepulse of 300ns duration, we observed plasma formation at 200ns before the main current. At this moment a first light emission and V-dot signals was observed. During the next 5-10 ns fast plasma components arrive at the center of the wire array and shunt the axial V-dot. After shunting, the axial V-dot shows signals correlated to axial current. Analyzing mass-velocity ratios, we determined that for the Al wire array hydrogen plasma arrived first at the center with velocity 666km/s, followed by carbon plasma with velocity 200km/s and later, the aluminum plasma with velocity 130km/s. Hence, before the main current starts the internal volume of the array is filled by low-density plasma. The axial V-dot signal indicates that the main current initially flows through the entire wire array cross-section, but it is rapidly rejected to the periphery. During the compression stage we observed that the current again flows through the center of the wire array.

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