

# COMPUTER SIMULATION OF CRITICAL BEHAVIOR OF LOCALIZED MASSES (CROWD)

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The paper presents the comparative analysis of existing approaches to formal description of localized human mass behavior in different psychophysical conditions. A mathematical model and calculation algorithm to predict crowd behavior in critical situations have been developed. The model describes psychophysical state of human masses in about-critical conditions including under external force. Results of complex calculations of crowd dynamics within the frames of typical scenarios (suppression of aggression, compulsion to move in specific direction, localization and neutralization of instigators etc.) using real on-line data (video) are presented.

Computer realization (software) of the presented model allows:

- to set initial state of active crowd (level of aggression, presence/amount of instigators of mass disorders etc.);
- to model development of situation (change of dynamic and psychophysical conditions of active crowd in time);
- to visualize dynamic and psychophysical conditions of active crowd in time with the help of modern multi-media technologies;
- to obtain computer interpretation of the calculated results from the viewpoint of borderline states and critical activity sources;
- to model consequences from non-lethal weapon deployment (change in crowd dynamics).

Keywords: crowd dynamic, crowd control, psycho physiological conditions, simulation software