

Rock Valley Direct Comparison instrumentation plan

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The Rock Valley Direct Comparison (RV/DC) project is the third phase of the Source Physics Experiment (SPE). Under RV/DC, two chemical explosions will be detonated near the hypocenters of a sequence of anomalously shallow earthquakes on the Nevada National Security Site. The explosions (nominally 1,000 and 10,000 kg TNT-equivalent) will be recorded by an extensive array of multi-physics sensors. This will be the first direct comparison of earthquake and explosion signatures originating from nearly identical hypocenters. The direct comparison will enable researchers to exploit the physical differences between explosion and earthquake sources sharing the same propagation path and recording sensors.

Here, we present the multi-physics sensor network we plan to deploy, which includes seismic, infrasound, distributed fiber optic and GPS stations. These instruments will be deployed on the Earth's surface, in deep boreholes, and on aerial balloon platforms. A full distribution of propagation ranges will be covered, from near-source (tens of meters), to regional (hundreds of kilometers) distances. We anticipate these signals will provide key metrics in next generation monitoring systems.

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Promotional text

This poster will describe the instrumentation plans for an innovative, large-scale, experiment to compare earthquake and explosion phenomena.

Oral preference format

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