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## **Search for potentially hazardous long-period comets based on the projection of their meteoroid streams**

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We describe a software tool that can be used for planning dedicated searches for long-period comets based on the projection of their meteoroid streams against the sky.

Long period comets with orbital periods in the range 250 to 4000 years produce dense enough meteoroid streams to be detected as meteor showers on Earth [1]. Those meteoroid streams gradually disperse over time [2] and that dispersion defines the range of orbits among which the parent comet may be found. There are over 200 known meteor showers from long-period comets that pass close enough to Earth orbit to do so [3]. Most of these parent comets have not yet been discovered.

A dedicated search using meteor showers as a guide can increase the warning time between detection of the comet and its potential impact by several years. The most important part of the orbit for such searches is when the comet is on approach to Earth and close enough to be detected in deep searches, but far enough to not already be detected in routine surveys. This limits the search area on the sky and defines a search strategy to detect comets that only rarely visit the inner solar system.

In this presentation, we discuss the physical mechanisms that lead to the dispersion of long period comets over time [4]. We use that insight to better understand the actual dispersion of showers based on the observed orbital elements at Earth. We then calculate the projected dispersion of these streams

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to define survey areas on the sky that can be targeted in deep searches [5]. We will discuss search strategies and feasibility.

**Comments:**

*(Oral Presentation)*

**References**

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