

Measurements of celestial coordinates of meteor events registered by TV system

A.P. Kartashova

Institute of Astronomy of Russian Academy of Sciences

e-mail: akartashova@inasan.ru

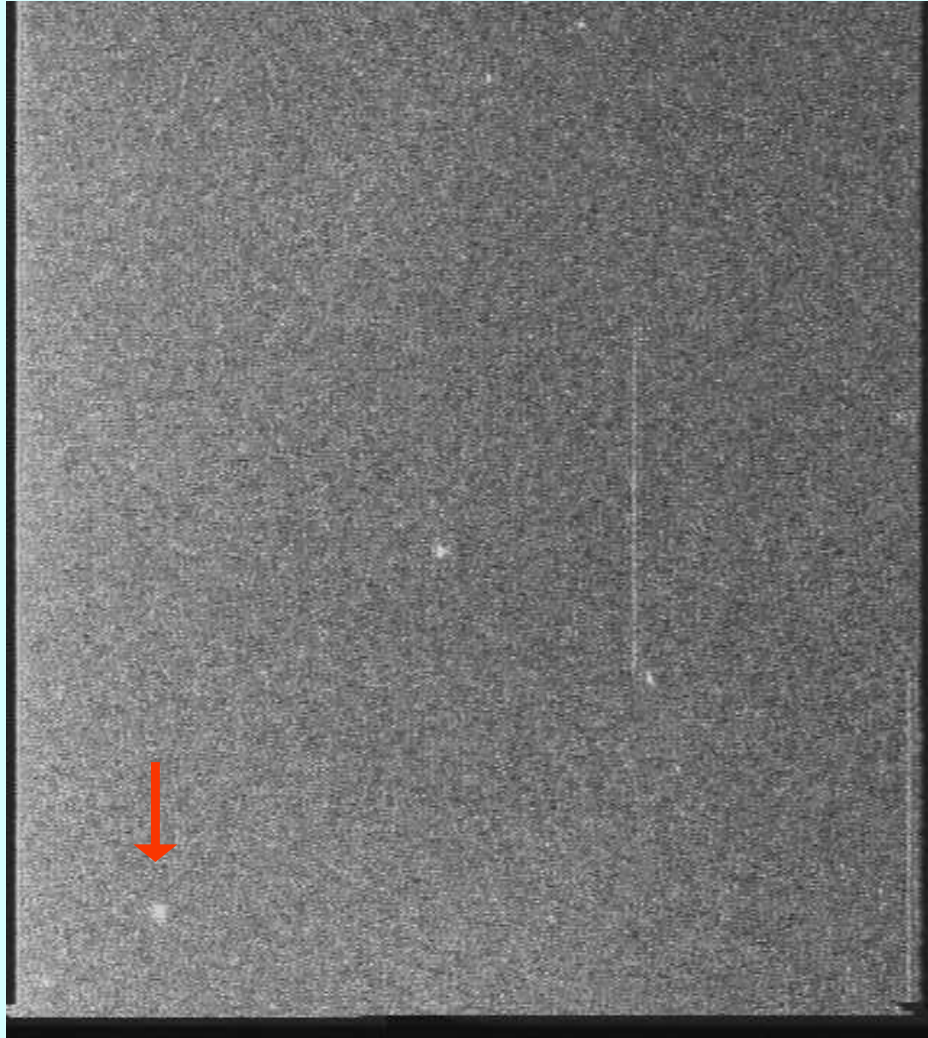
International Meteor Conference 2010
September 16-19, Armagh – Northern Ireland (UK)

Observations need simple method to calculate meteor coordinates at various conditions of observations, say, when a meteor is registered through clouds and stars are not visible.





Now some different methods are used to determine equatorial coordinates of celestial objects in the frame. These methods are based on simultaneous measurements of the object and reference stars positions, e.g. in the same frame.



Usually in real meteor observations the number of reference stars in the frame is not sufficient.

Reference coordinates A , h in the frame to the celestial coordinates may be determined by the measurement of star position in the same field of view.

We present the simple method for calculations of equatorial coordinates of any point in the single TV frame.

This method does not need many stars in the frame!

Reference stars in one frame

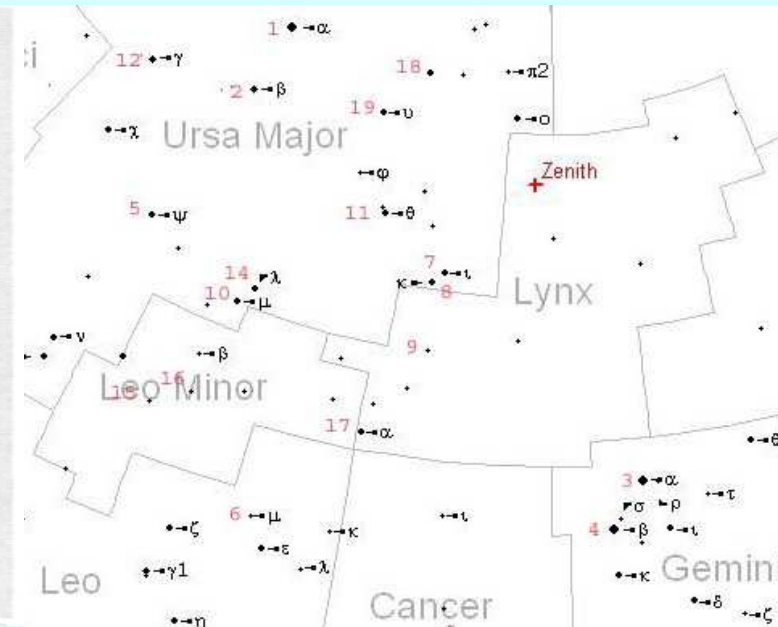
(x,y)



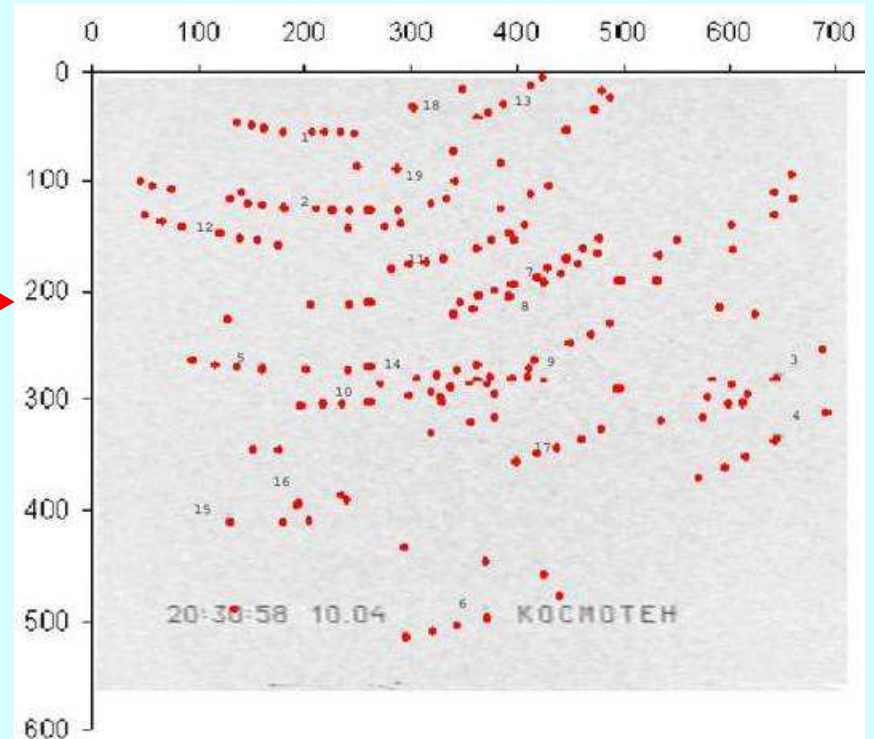
(t,δ)



$(\alpha, \delta + ST)$



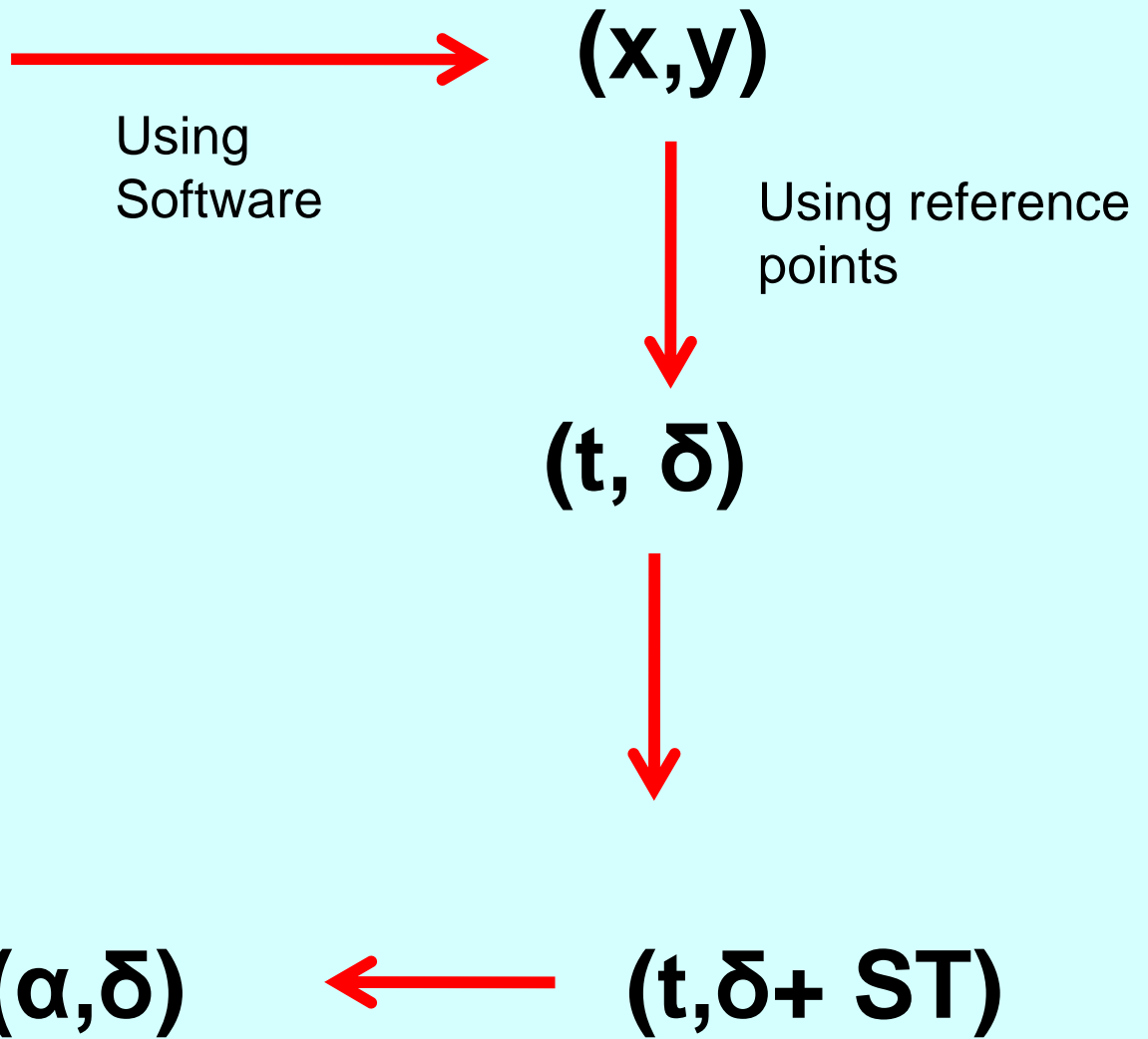
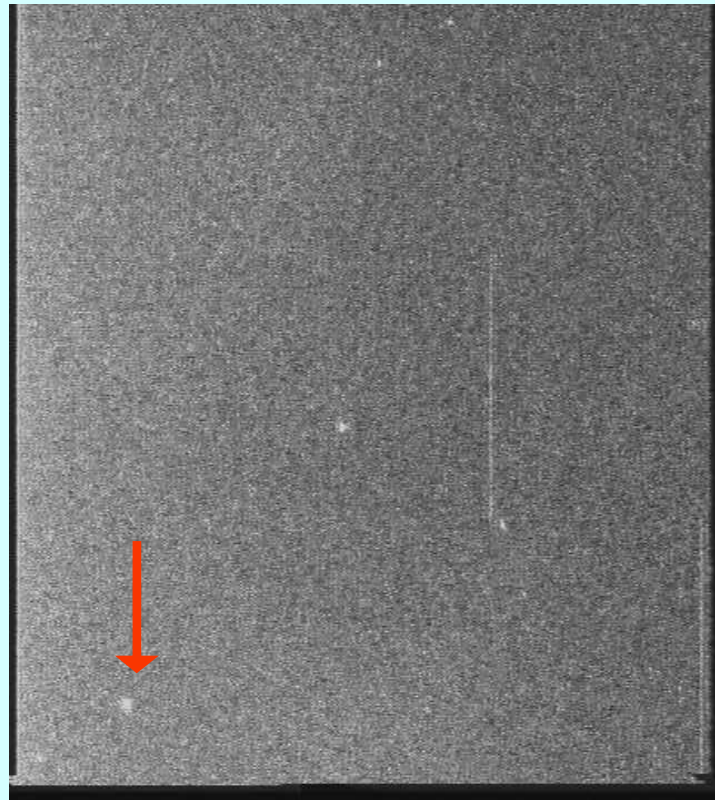
Reference points



Final table of reference points

| No stars | t(h) | δ (°) | X(pix) | Y(pix) |
|-----------------|-------------|--------------------------------|---------------|---------------|
| 1 | 21,69 | 44,48 | 94 | 263 |
| 2 | 21,78 | 61,73 | 136 | 48 |
| 3 | 21,82 | 56,36 | 130 | 118 |
| ... | | ... | ... | |
| 12 | 22,47 | 41,48 | 197 | 306 |
| 13 | 22,97 | 25,99 | 294 | 514 |
| ... | | | | |
| 21 | 23,29 | 51,66 | 281 | 180 |
| 22 | 23,79 | 47,14 | 341 | 222 |
| 23 | 23,84 | 41,76 | 361 | 280 |
| ... | ... | | ... | |
| 50 | 25,27 | 31,88 | 575 | 317 |
| ... | | | ... | ... |

Measurements of meteor coordinates



Conclusion

The method can be used for wide-angle cameras independently of their internal aberrations since the local interpolation in very close environments is adopted.

The method is applicable for processing of observations in cloudy conditions even in the case when no star in the single frame is registered.

This method is very useful for any observation with fixed camera as well as with a mobile wide-field camera ordinary used for meteor observations.

Thank you!