
```
function F = HypEccAnomFromMeanAnom( Mh, e, tol )
%
% Use Newton Raphson method to solve Keplers equation:  $e*\sinh(F) - F =$ 
%   Mh
%
% Note: The initial guess of  $F=Mh$  is only good for relatively small Mh
% values. For larger values of Mh (larger times away from periapsis
% crossing), the value of F should be much smaller than Mh.
%
% Inputs:
%   Mh      Hyperbolic mean anomaly (rad)
%   e       Eccentricity ( $0 \leq e < 1$ )
%   tol      Error tolerance. Optional.
%
% Outputs:
%   F       Hyperbolic ecentric anomaly (rad)
%
if nargin<3
    tol = 1e-8;
end

% initial guess
F = Mh;

dist = inf;
while dist>tol

    % compute function value and function derivative value
    f = e*sinh(F)-F-Mh;
    fp = e*cosh(F)-1;

    % distance between current and next iterate
    dist = abs(f/fp);

    F = F-f/fp;
end
```

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