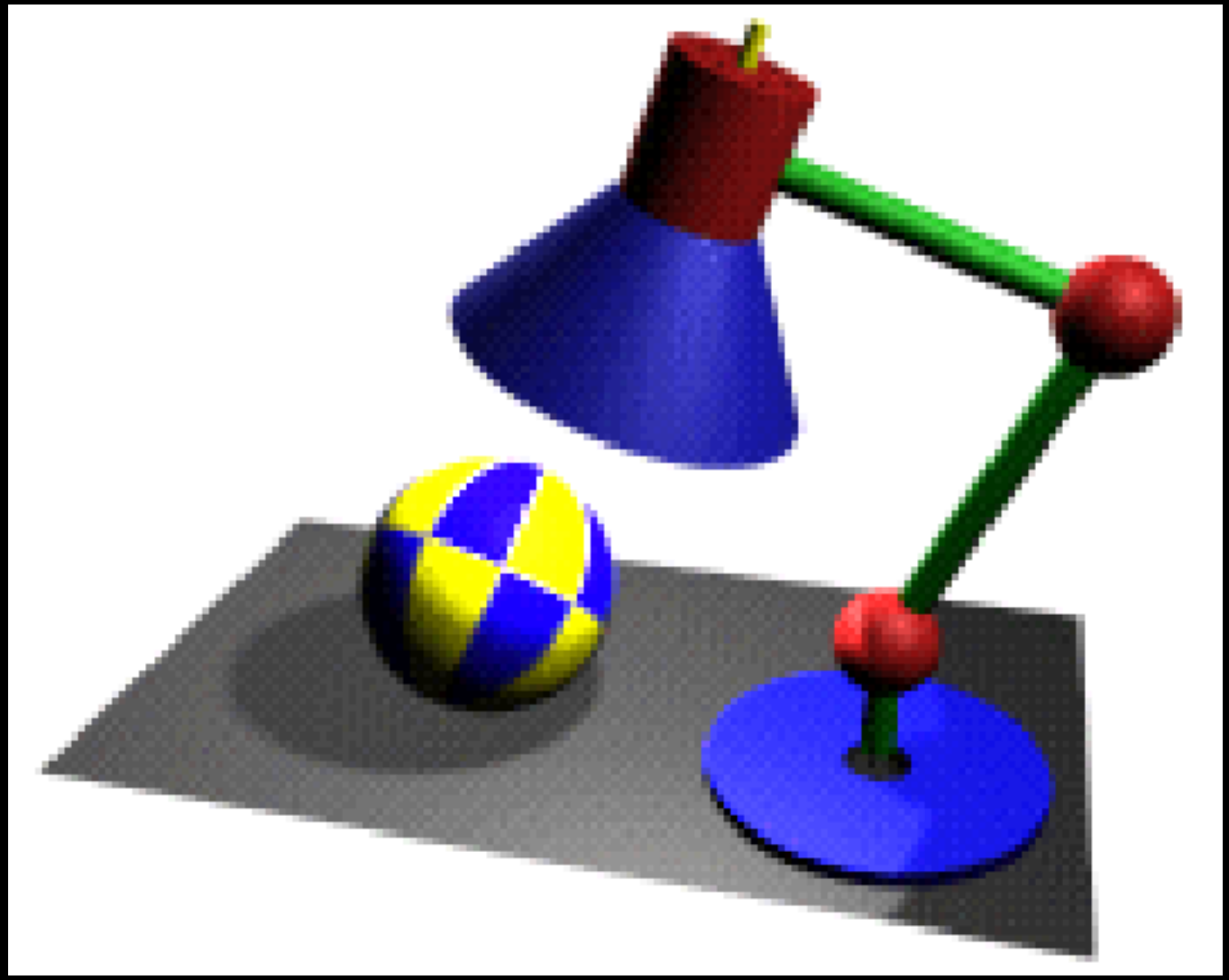
Animacija predmetov



Animation techniques

User-driven

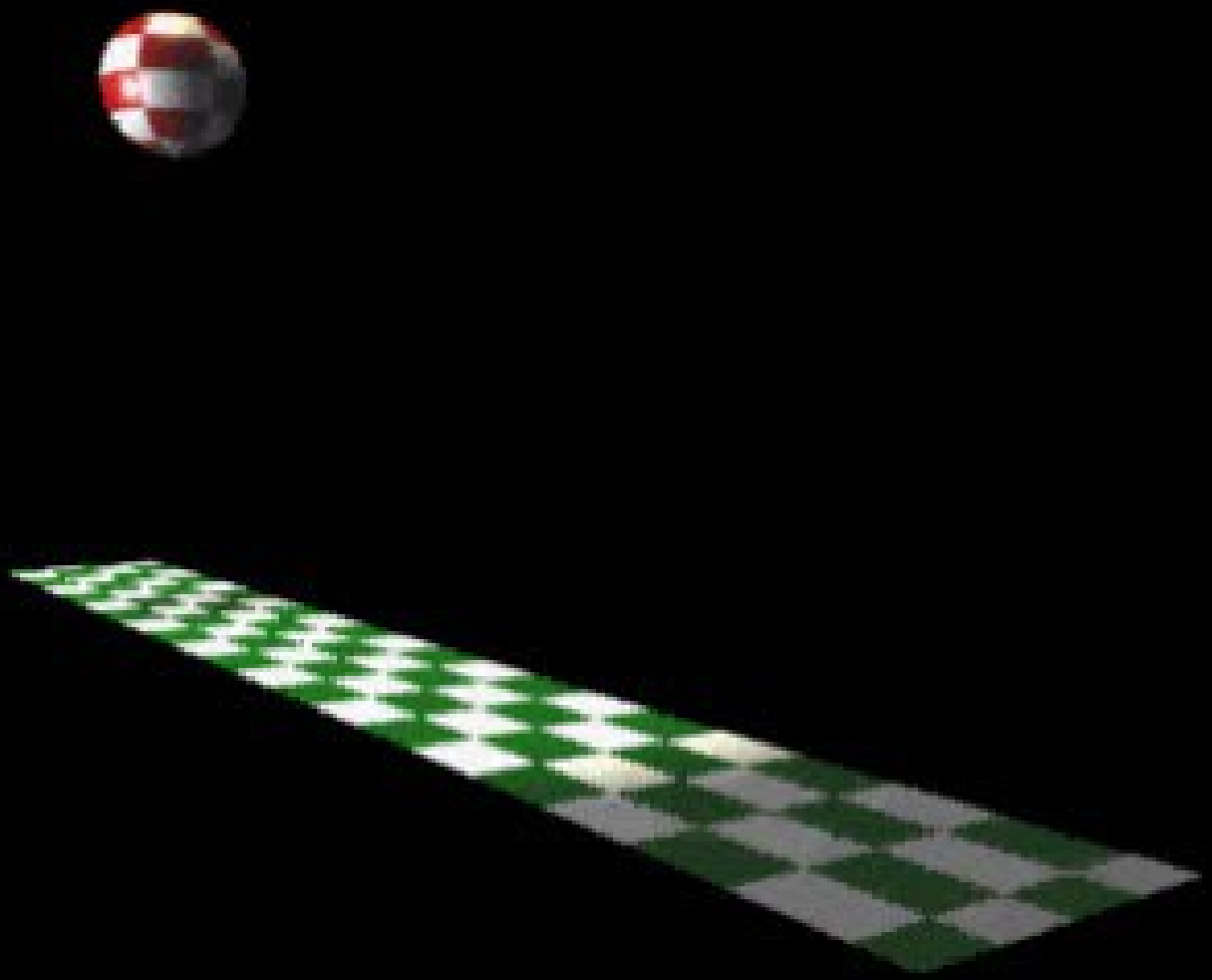
- keyframing
- motion capture

Procedural animation

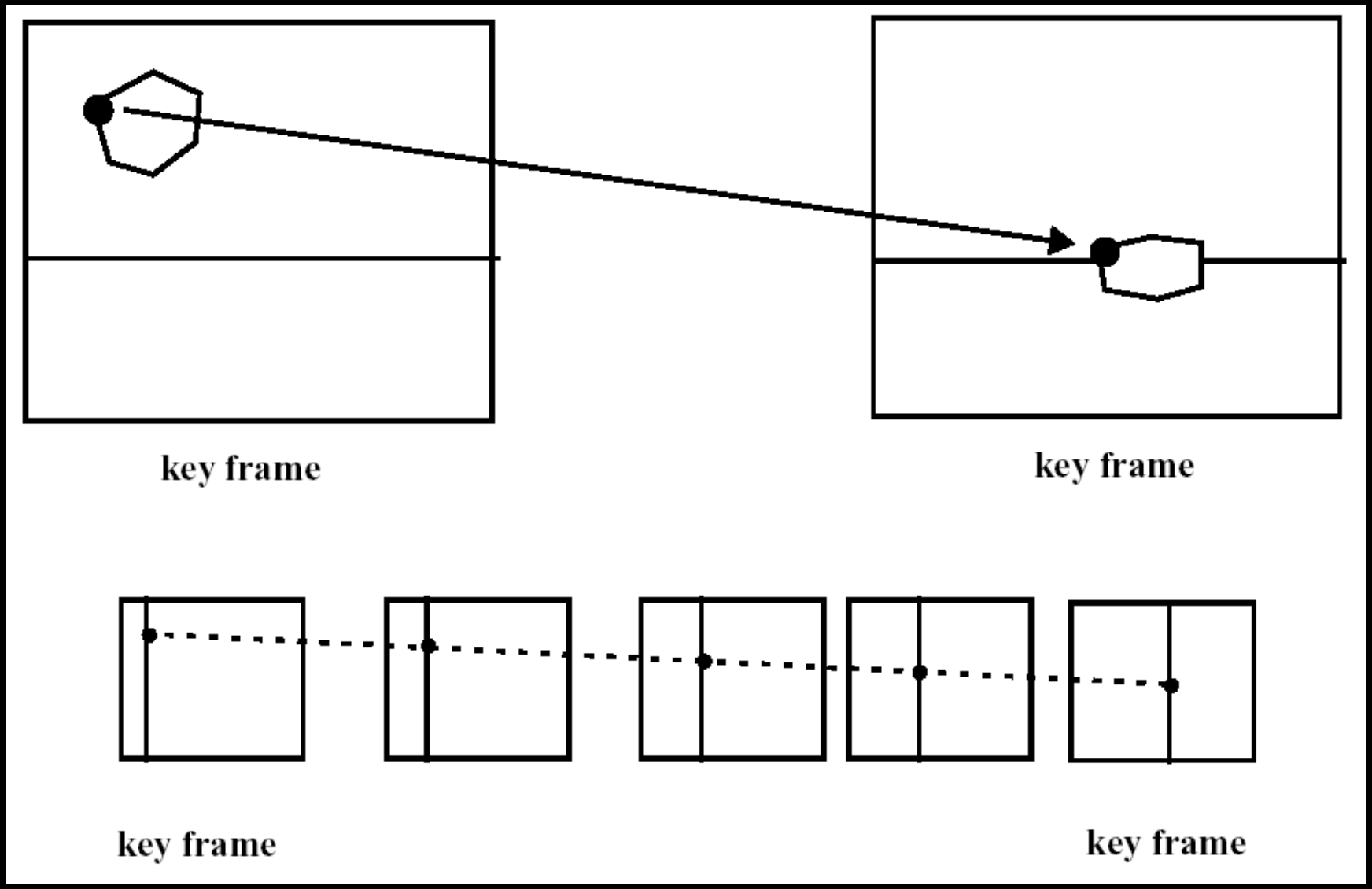
- physical simulation
- particle systems
- crowd behaviors

Data-driven animation

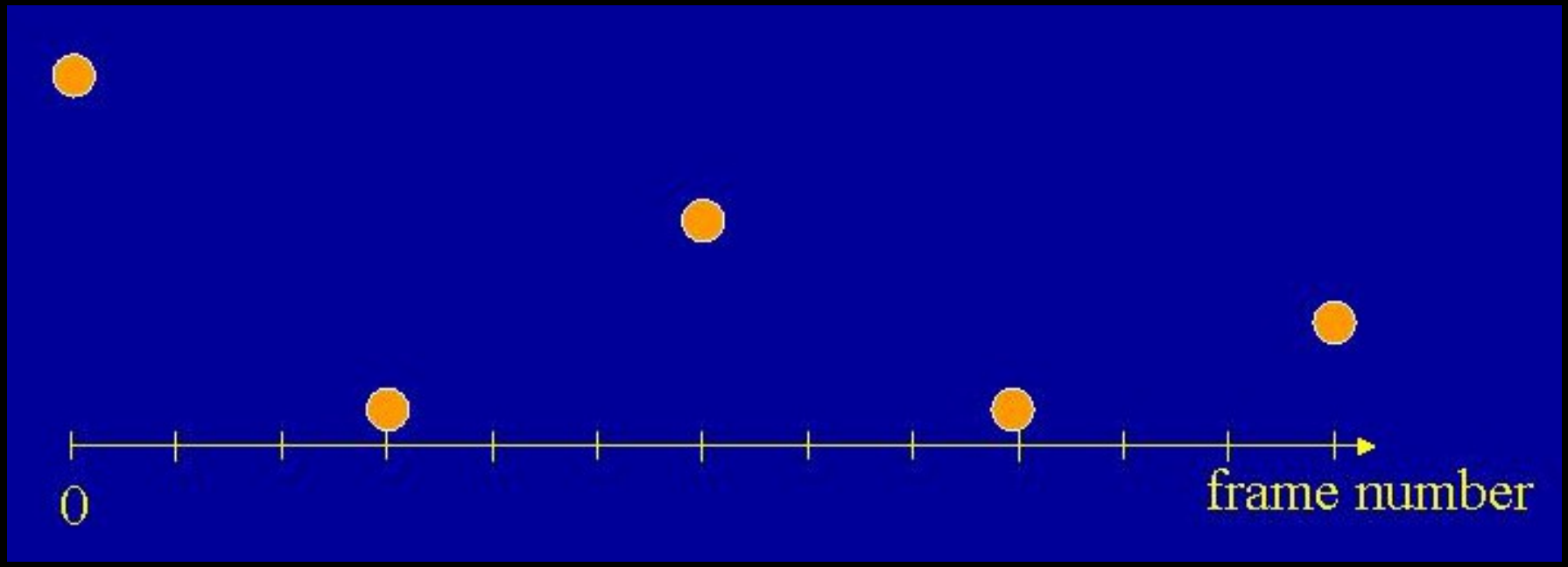
Poskočna žogica



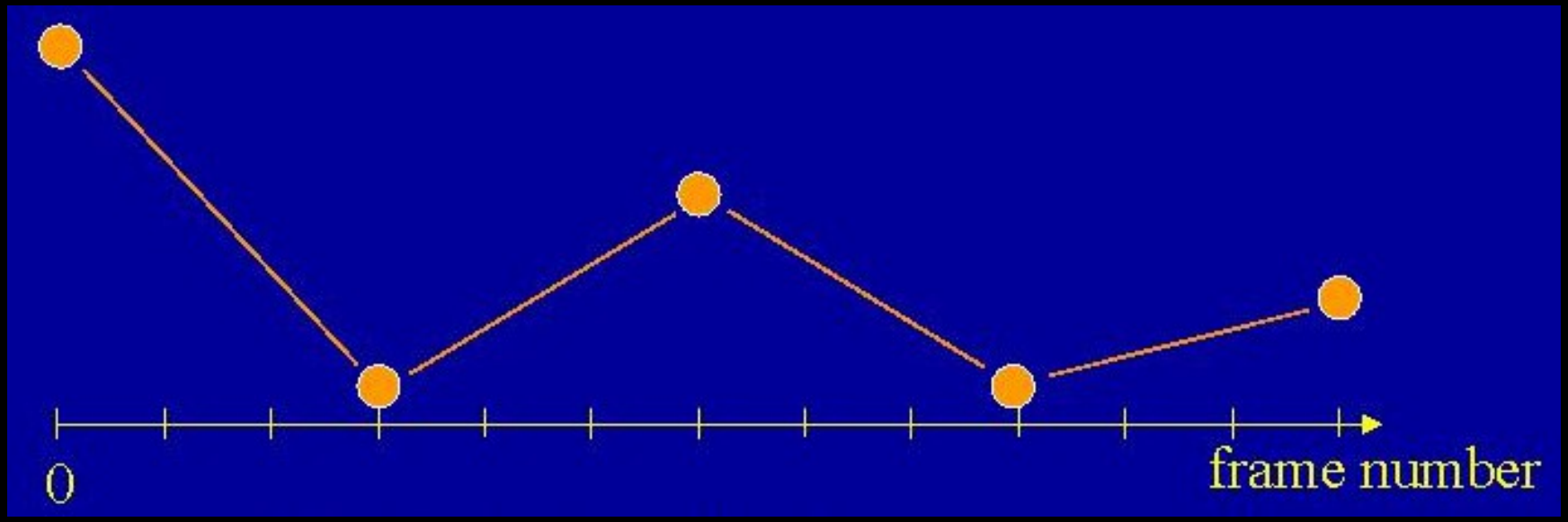
Key-Frame Systems



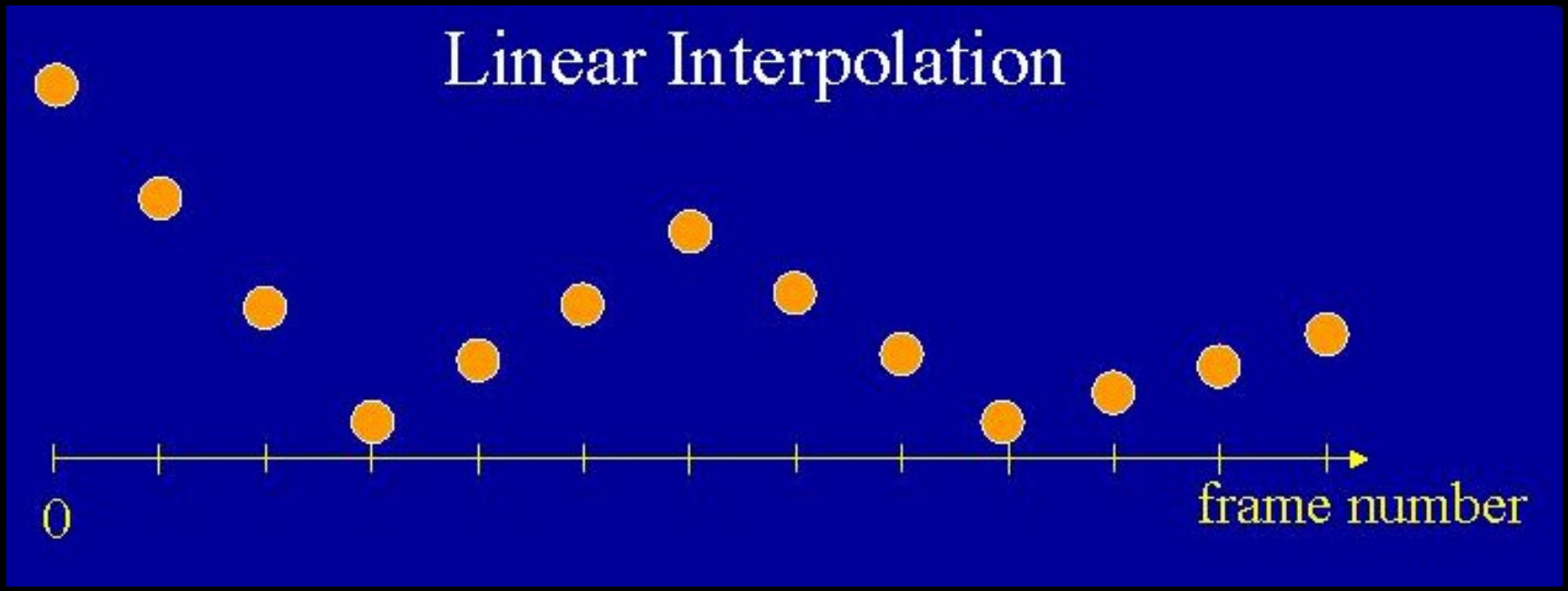
Keyframing a Bouncing Ball



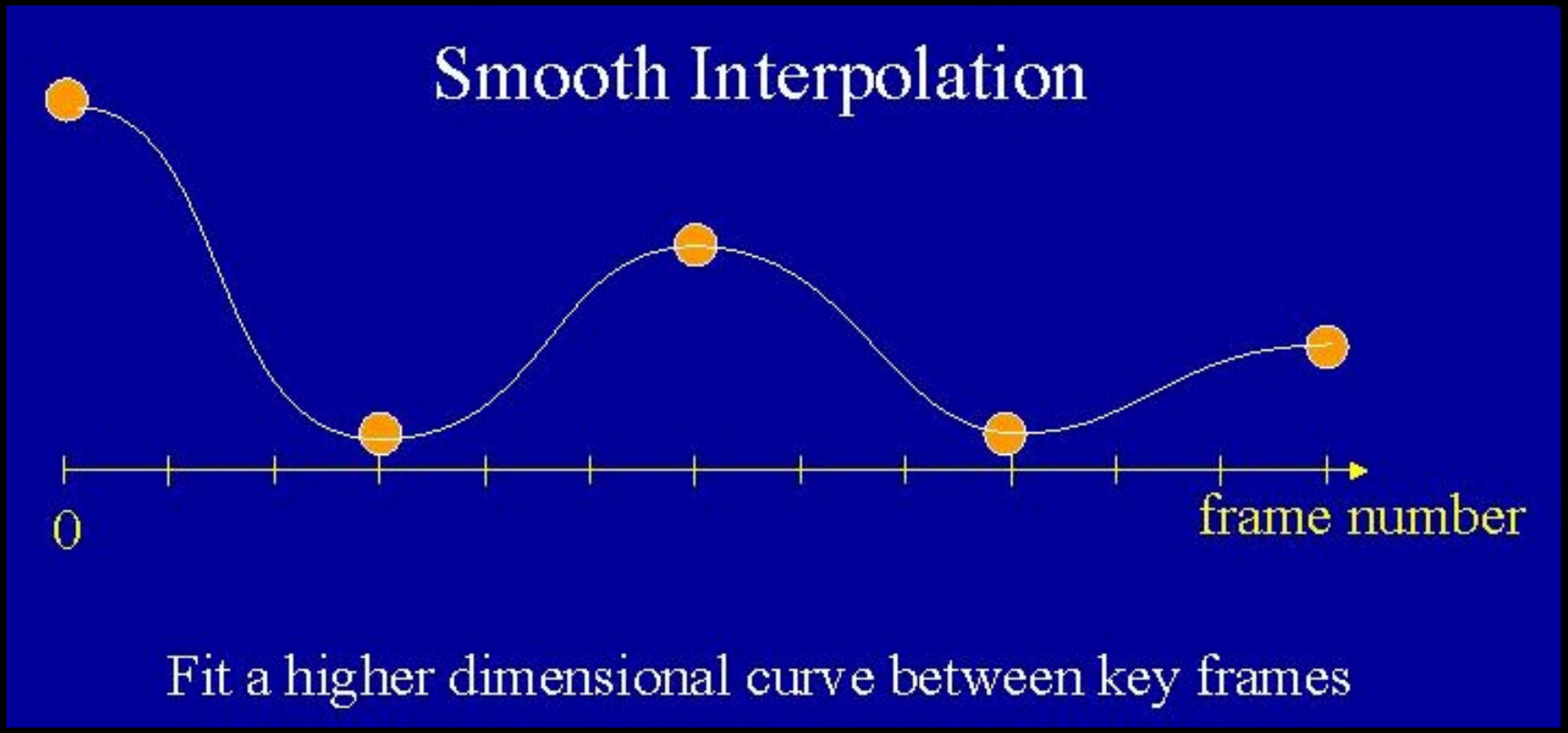
Keyframing a Bouncing Ball
→ **Linear Interpolation**



Keyframing a Bouncing Ball



Keyframing a Bouncing Ball



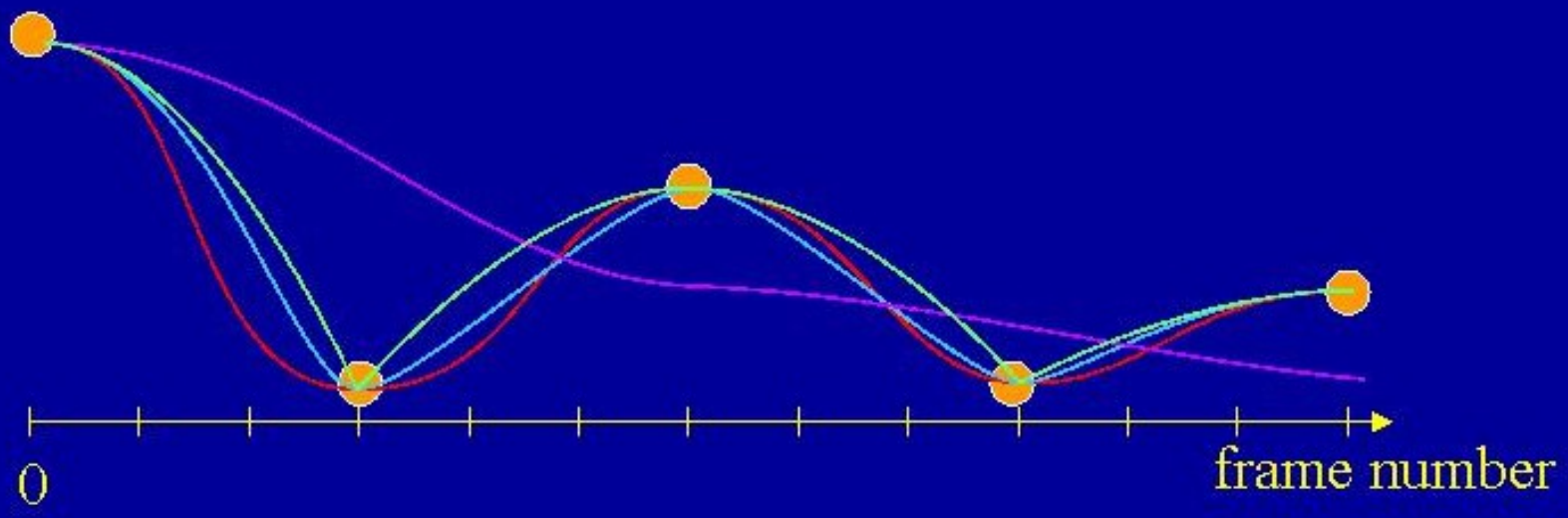
Keyframing with Splines

Decisions:

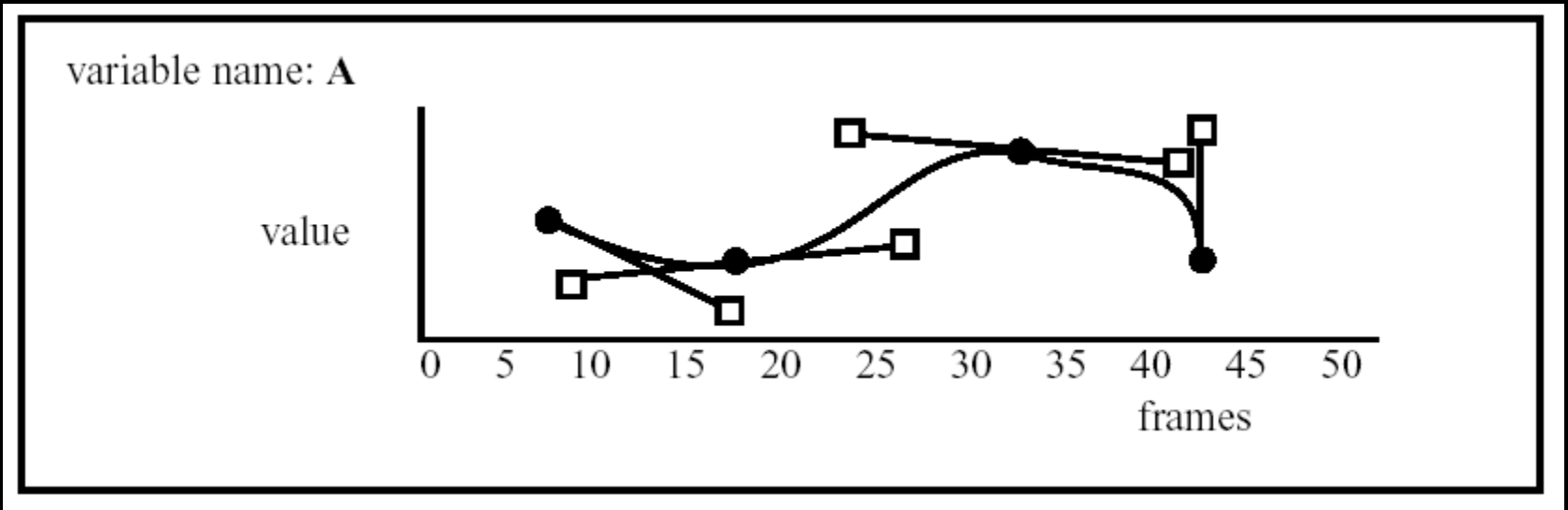
Do spline endpoints go through key frames exactly?

Must adjoining splines preserve continuous derivatives?

Allow time to reparameterize?



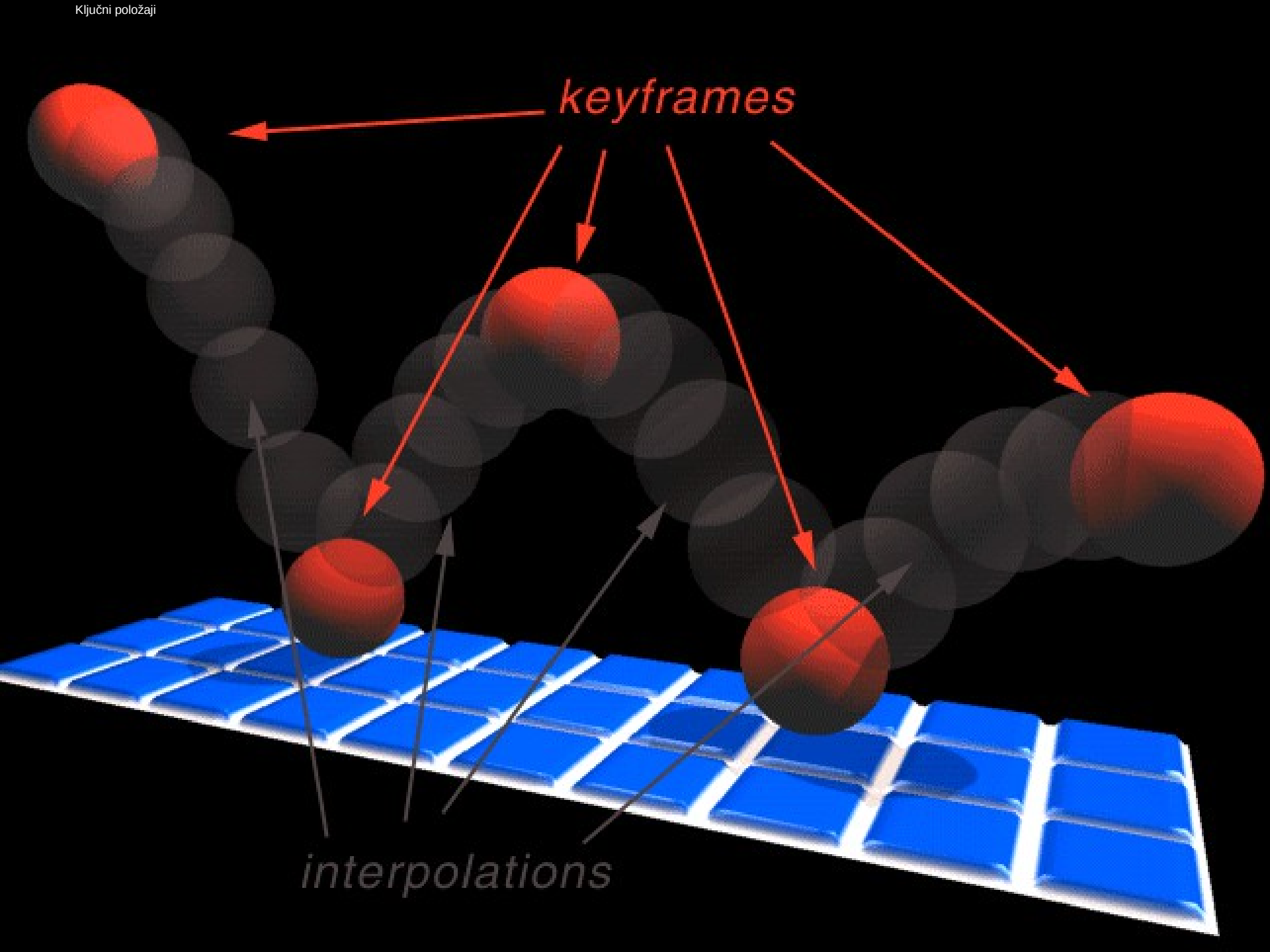
Key-Frame Systems



Important Properties at a Control Point

- **Tension**
  - How sharply the curve bends
- **Continuity**
  - Smooth visual variation in the continuity
- **Bias**
  - Direction of the path

Ključni položaji

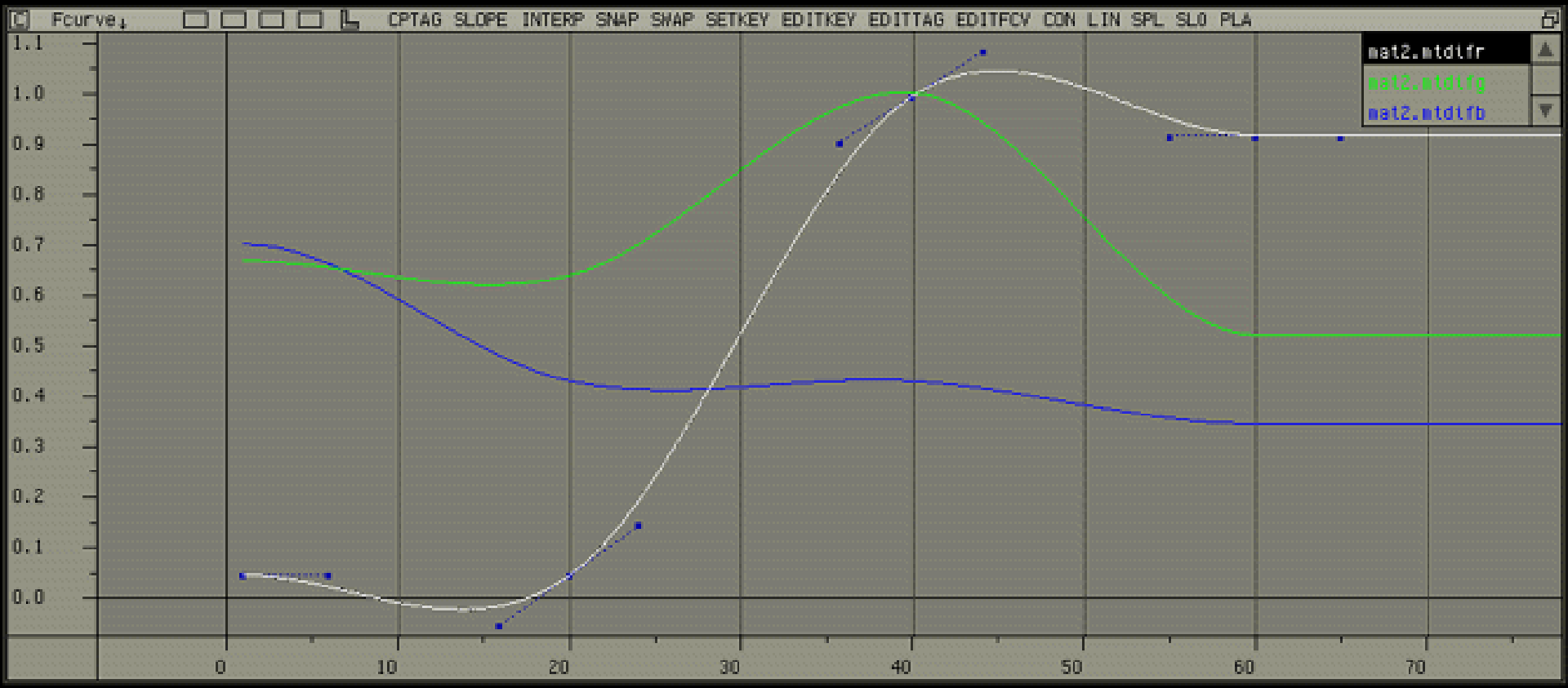


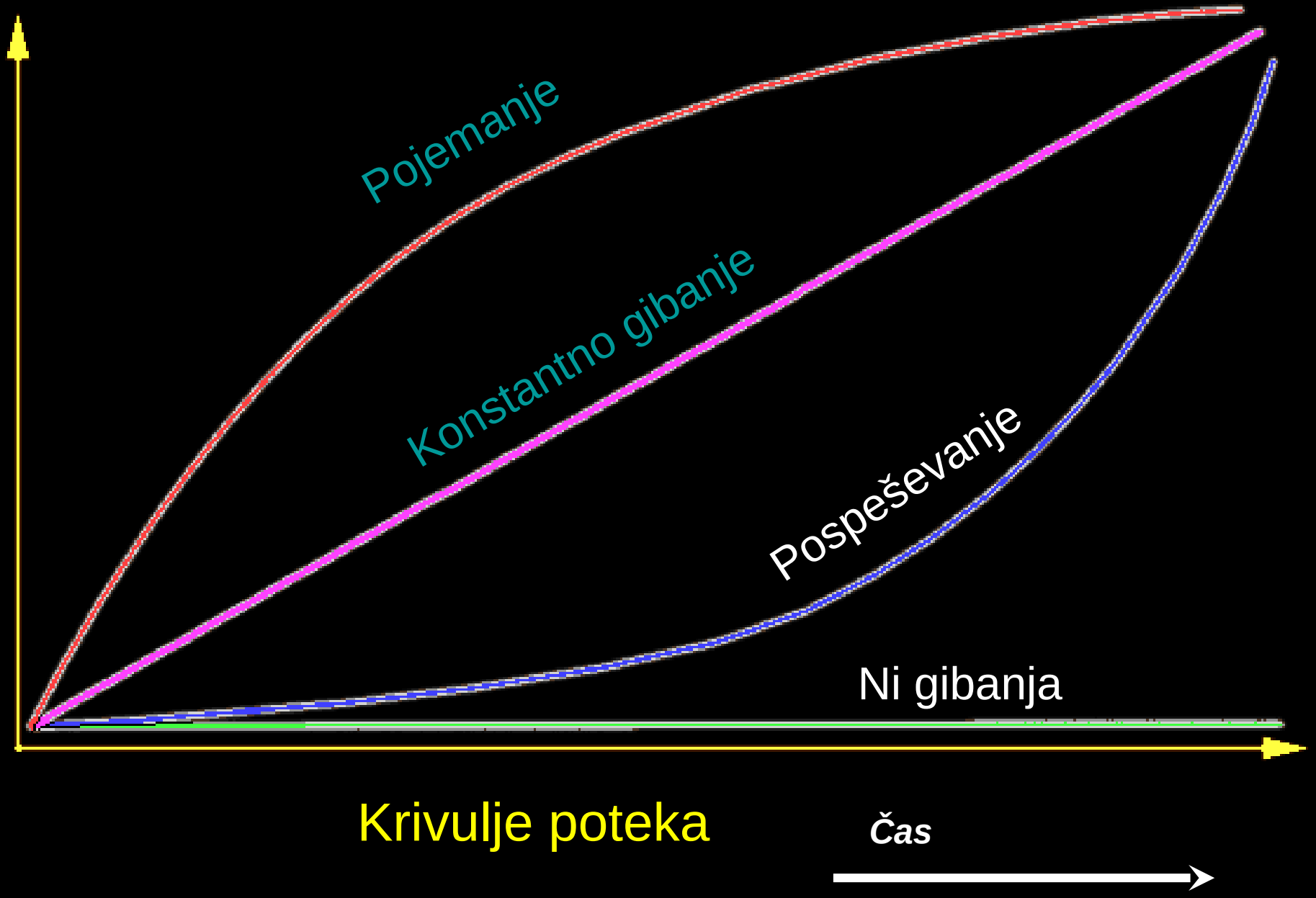
Krivulja poteka višine

Višina

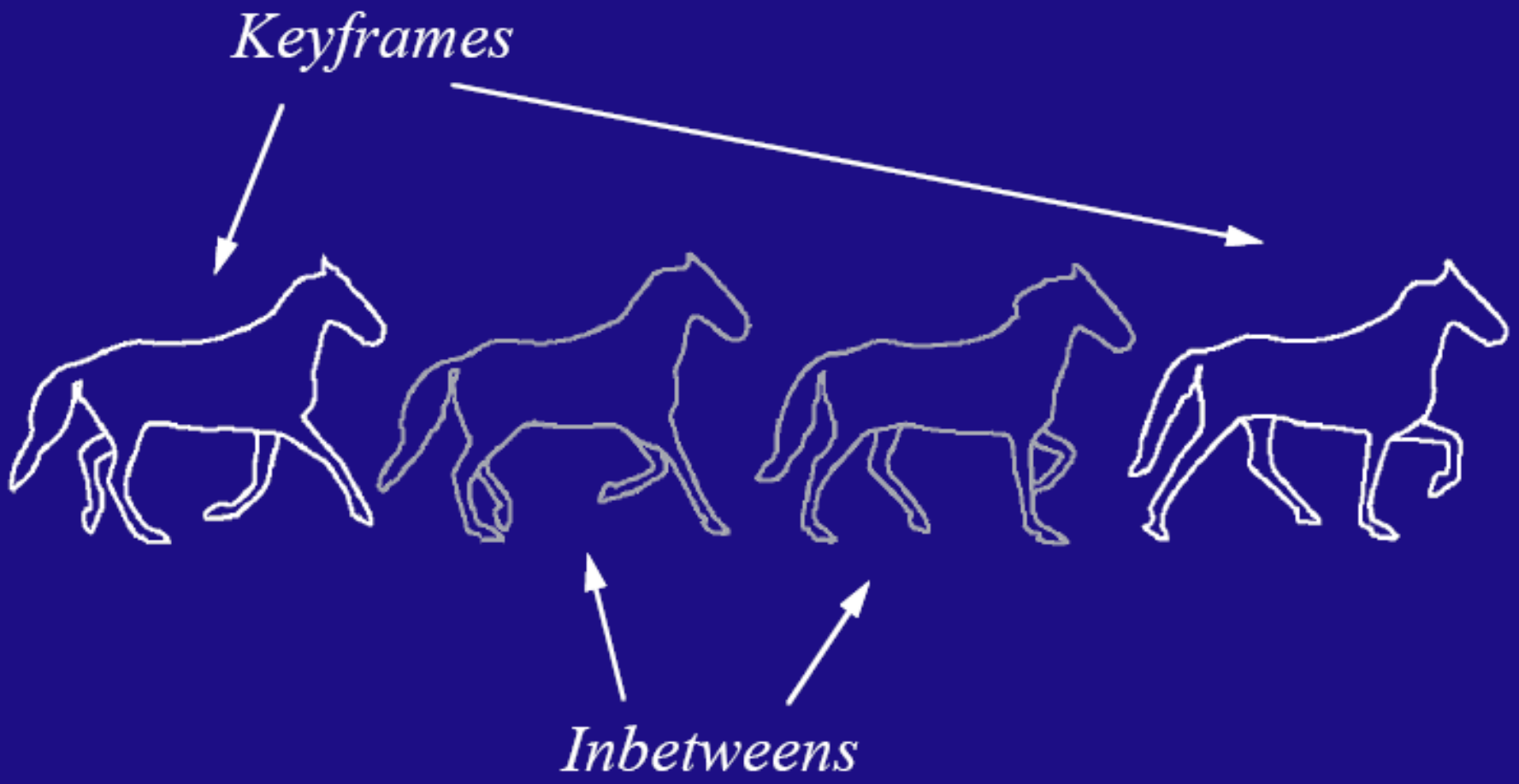
Čas

Krivulje poteka



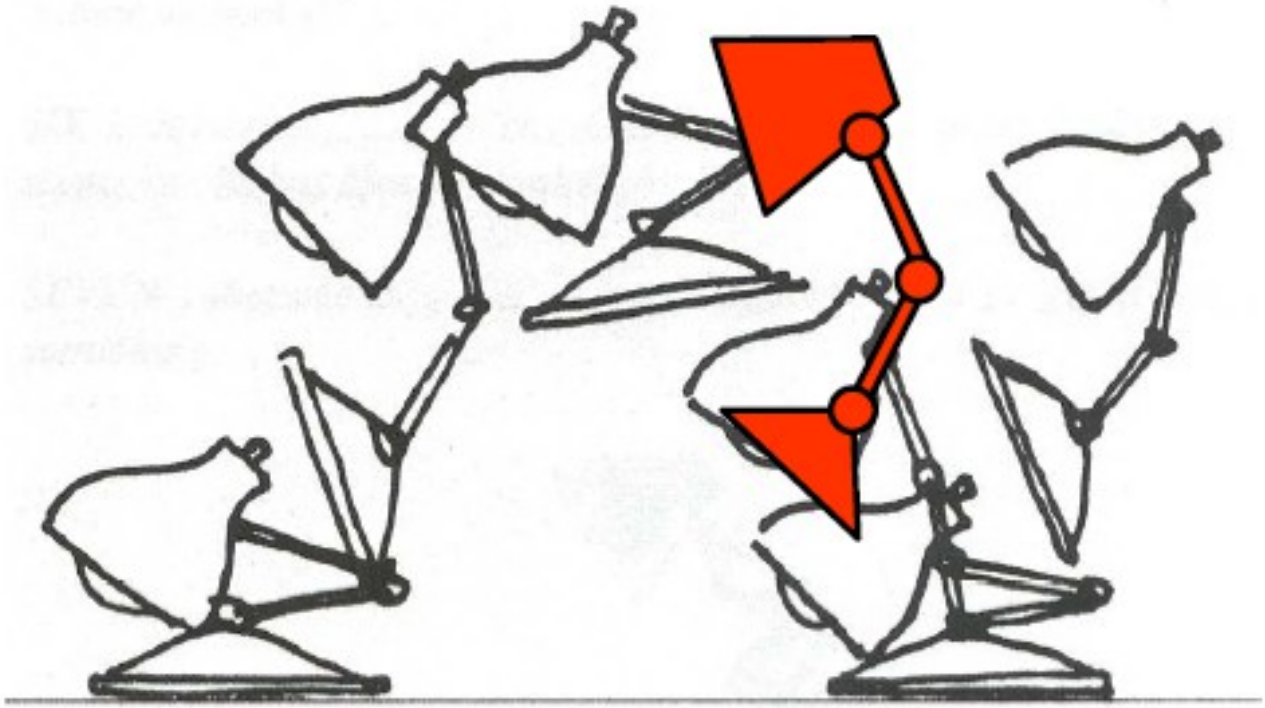

Pojemanje
Konstantno gibanje
Pospeševanje
Ni gibanja
Krivulje poteka
Čas

Animation



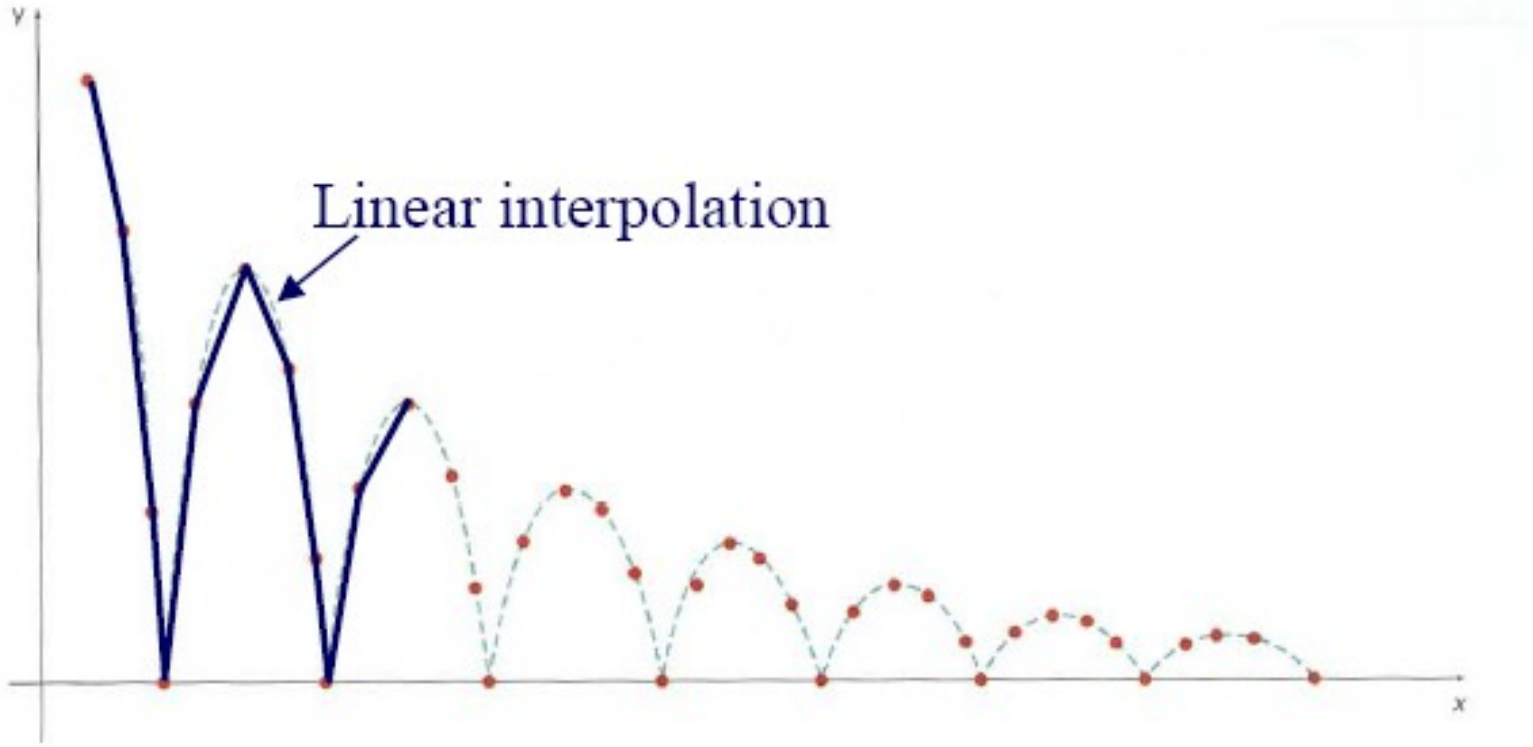
Keyframe Animation

Interpolate variables describing keyframes to determine poses for character “in-between”



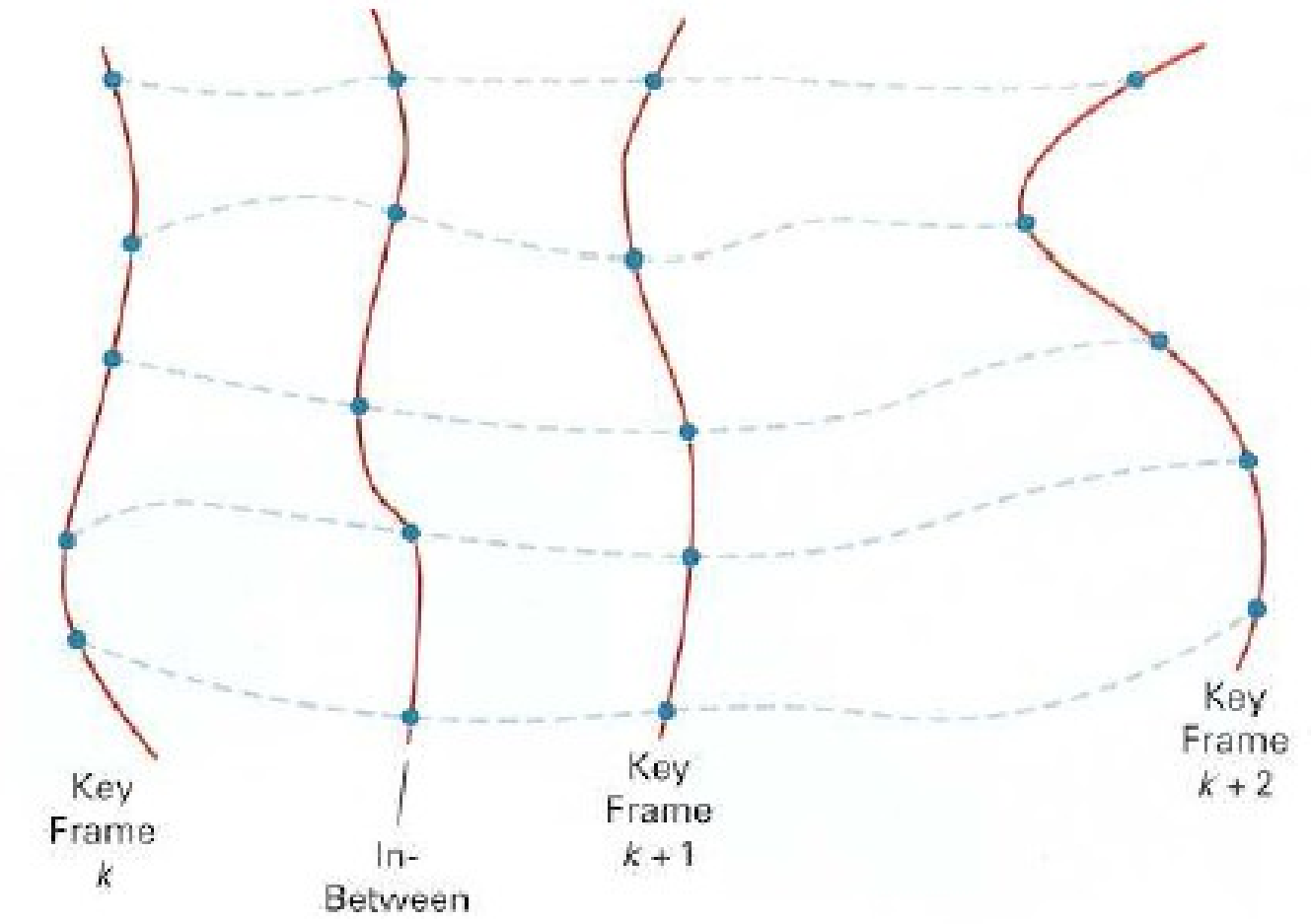
Inbetweening:

- Linear interpolation - usually not enough continuity



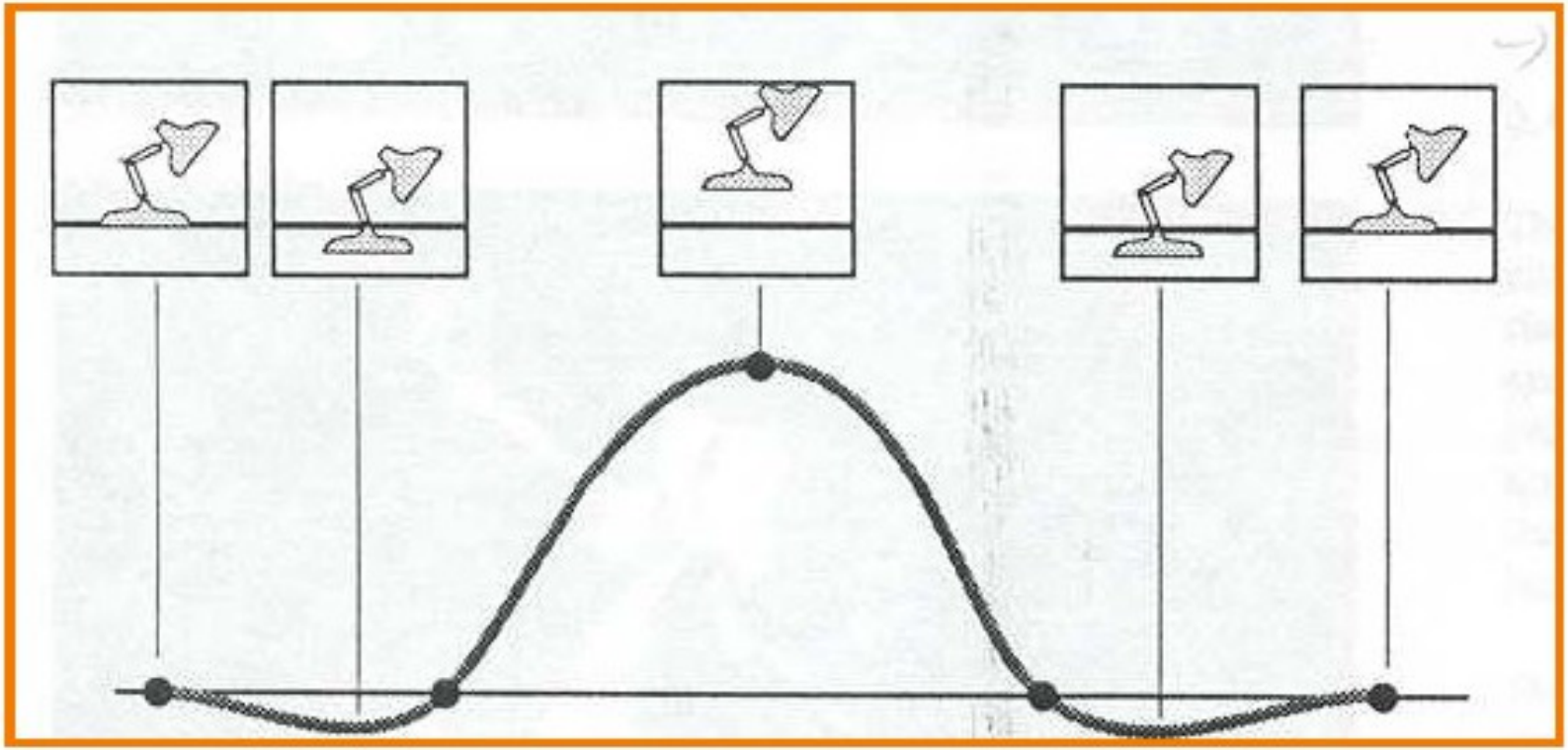
Inbetweening:

- Spline interpolation - maybe good enough



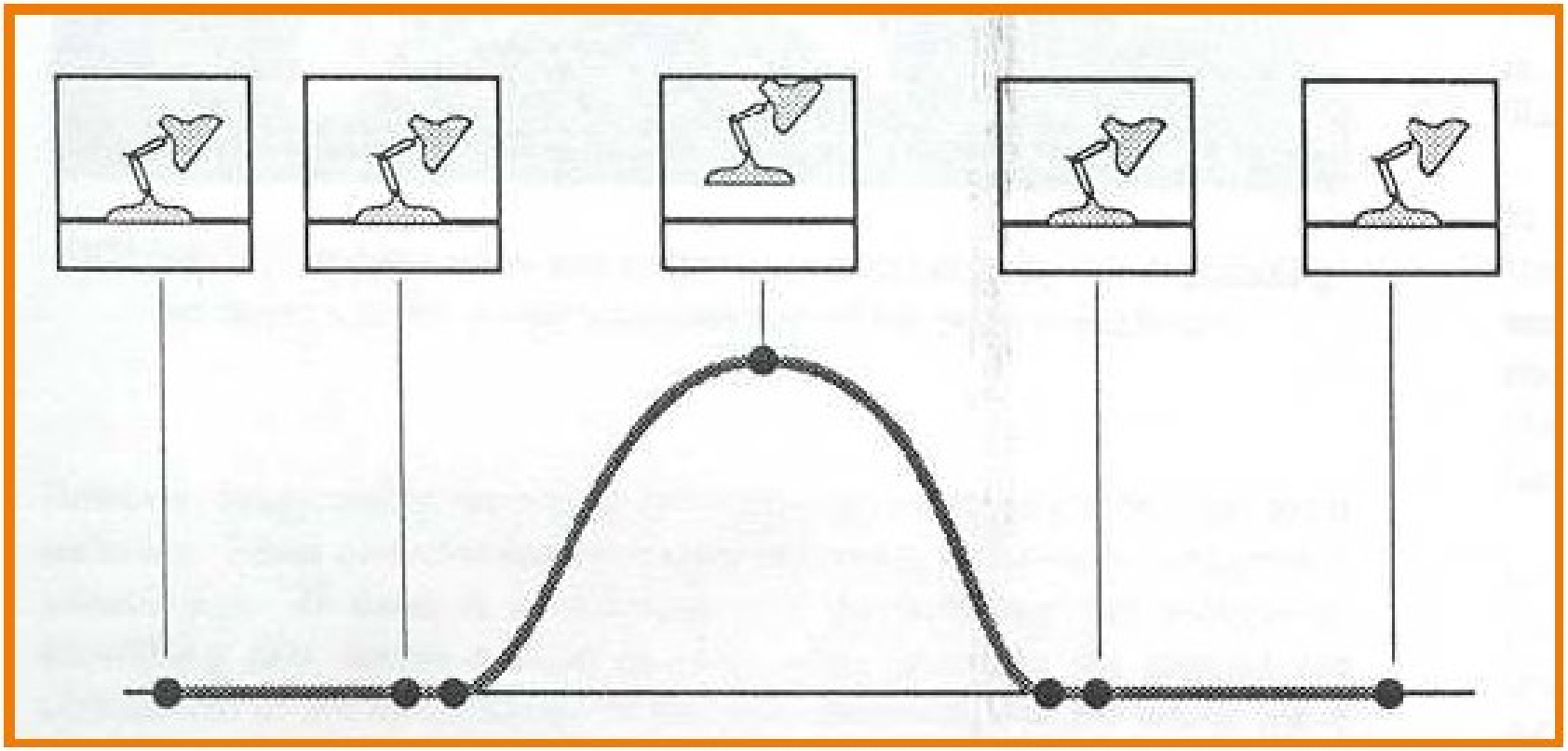
Inbetweening:

- Cubic spline interpolation - maybe good enough
  - » May not follow physical laws



Inbetweening:

- Cubic spline interpolation - maybe good enough
  - » May not follow physical laws



Summary of keyframing

Pros:

- very expressive. total control to the artist

Cons:

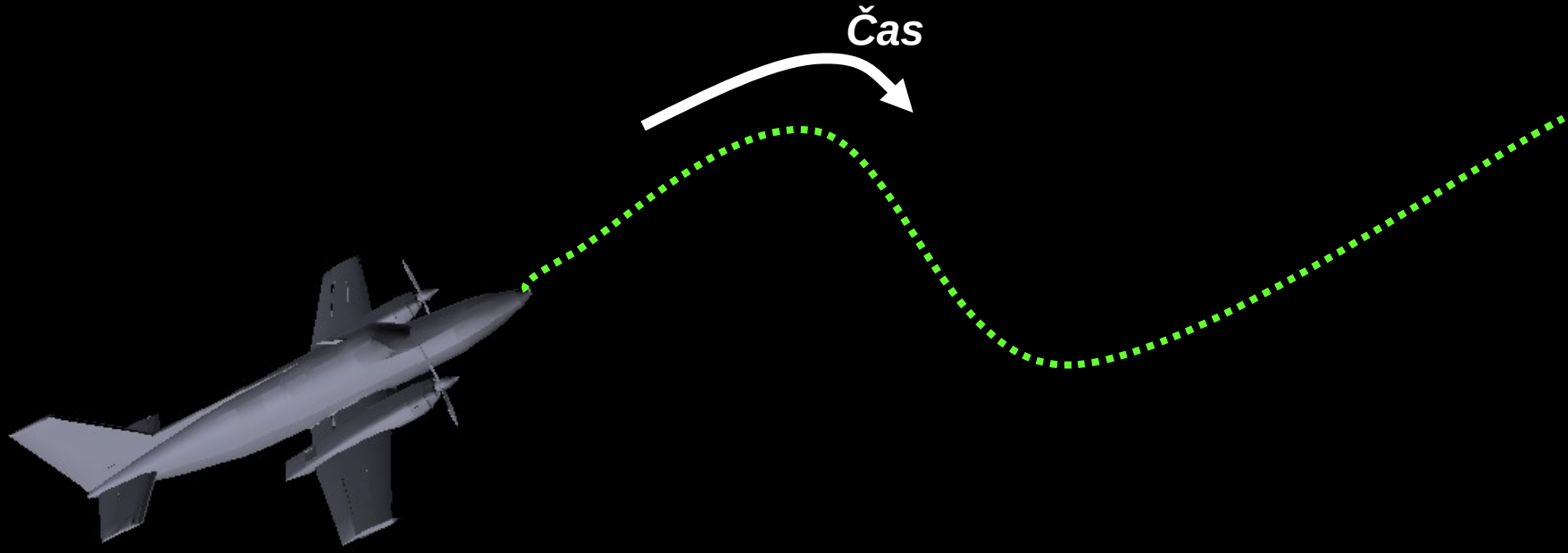
- very labor intensive
- hard to create physical realism

Uses:

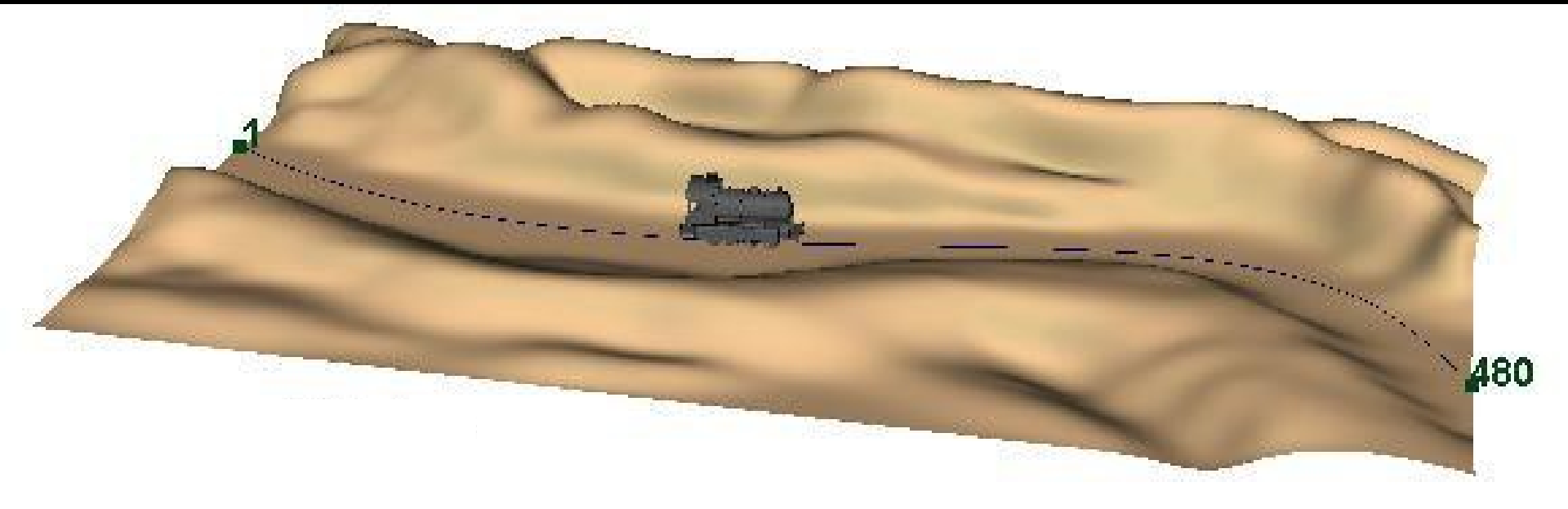
- potentially everthing except complex physical phenomena (e.g., smoke)

Kako še povzročimo gibanje

Pot po krivulji



Animate an object along a path specified by a curve. This is useful for animating objects such as trains, boats, airplanes, and moving cameras.



Omejitve gibanja