CAD-Übung Pro/Engineer

- Programmierschnittstelle
- Interne Objektdarstellung
- Besondere Konstruktionselemente
- PhotoRender

Pro/ENGINEER-Programmierung

- Pro/TOOLKIT-Library

  Kommunikation mit ProE über die Funktionen der protoolkit.lib

  - Synchroner Modus: ProE startet zuerst und bindet bei Bedarf die Fremd-Applikation als dynamic-link-library dazu

    - Beispiel: synchrone „ProE Auxiliary Application“

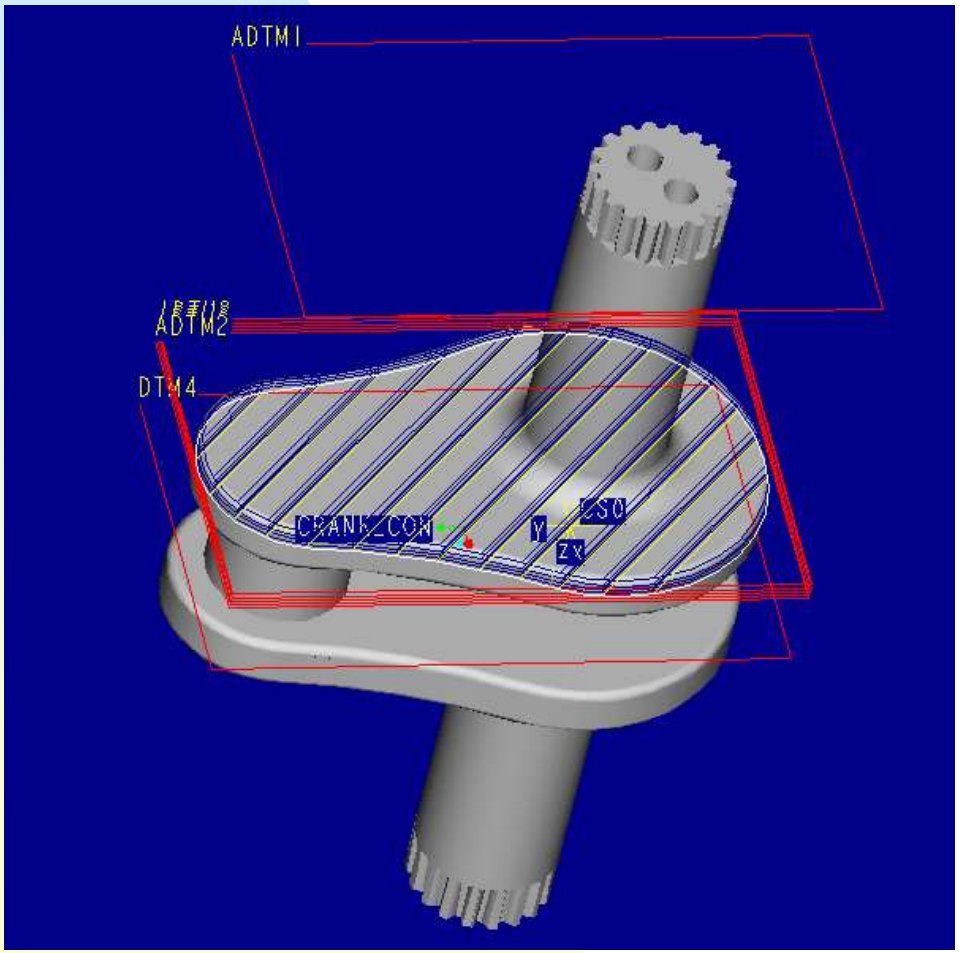
```
int user_initialize() // wird beim Start der AuxiliaryApp aufgerufen
{
   ProMenuFileRegister(„part“, „part.mnu“, &menu_id);
   ProMenubuttonActionSet(„part“, „Status“,
    (ProMenubuttonAction)UserPartStatus, NULL, 0);
}
UserPartStatus() // Menubutton-Callback-Function
{
   ...
}
void user_terminate() // wird beim Beenden der AuxiliaryApp aufgerufen
```

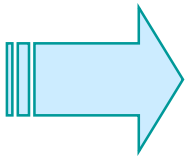
Pro/ENGINEER-Programmierung

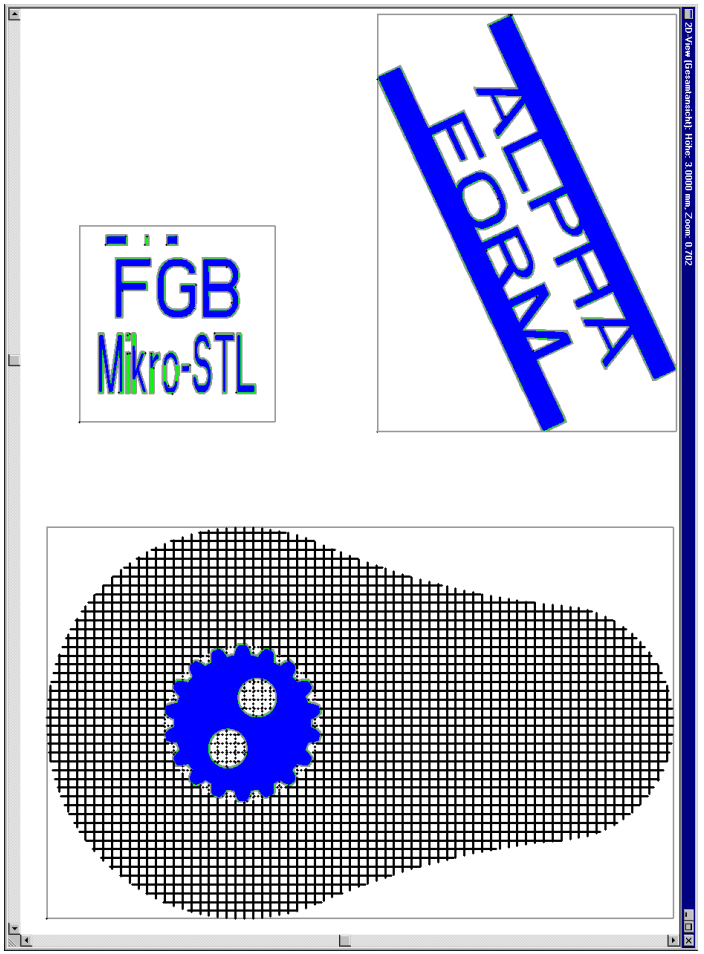
- Asynchroner Modus
  - ProE wird von der Fremd-Applikation gestartet
    - ☞ Beispiel: Applikation mit asynchroner Anbindung an ProE

```
main()
{
   ...
   ProEngineerStart();
   ...
   ProMdlRetrieve(„glas.prt“, PRO_MDL_PART, &mdl);
   ...
   ProEngineerEnd();
}
```

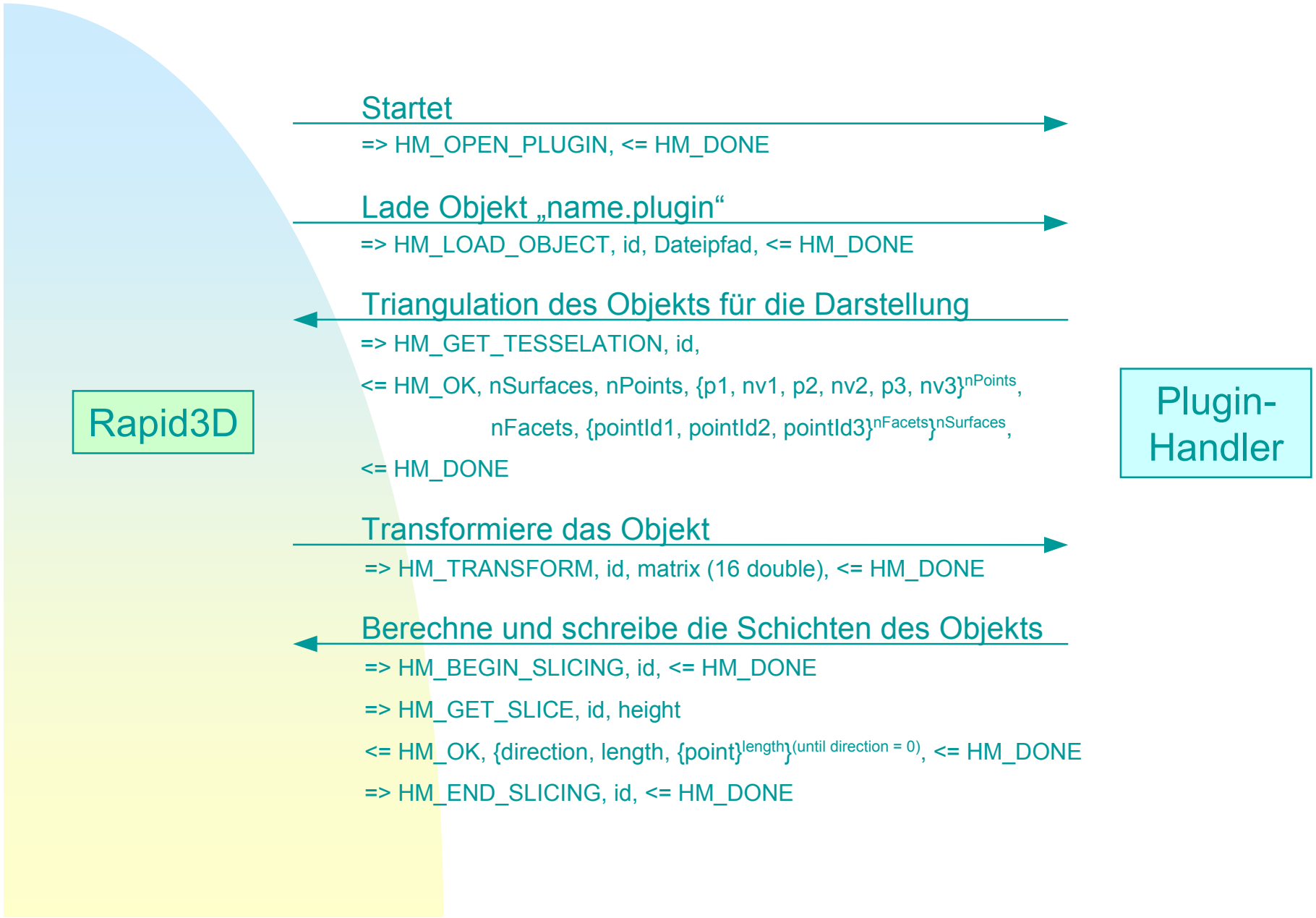
ProE-Handler für Rapid3D







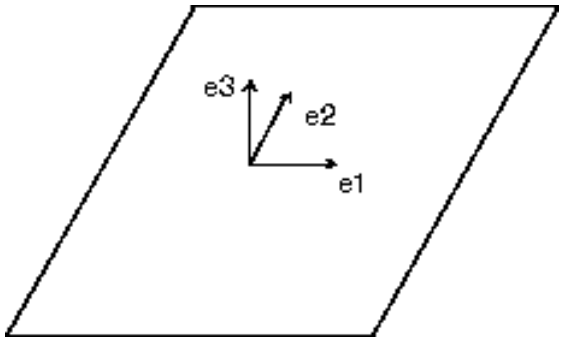
Kommunikationsprotokoll Rapid3D - PluginHandler

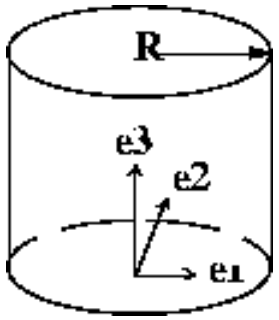


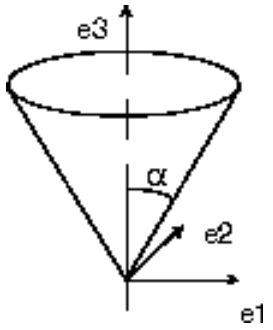
Interne Objektdarstellung von ProE

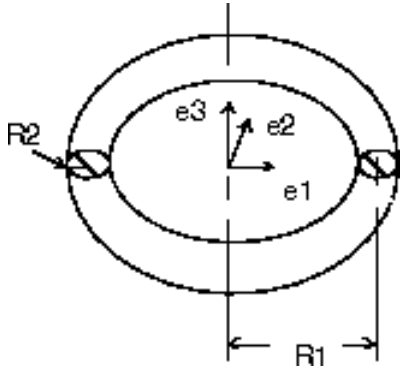
- Die Bauteile werden durch ihre Grenzflächen beschrieben
- Normalenvektoren auf den Oberflächen bestimmen Objektinneres und –äußeres
- Die Oberflächen sind durch Kurven begrenzt
- Oberflächenarten (siehe auch CAD-Übungs-Homepage):
  - Ebene
  - Zylinder, Kegel, Torus
  - Rotationsfläche, Regelfläche, Profil, Coons Patch, Fillet Surface
  - Spline-Oberfläche, NURBS-Oberfläche, zylindrische Spline-Oberfläche
- Kurventypen:
  - Linie, Kreisbogen, Spline, NURB

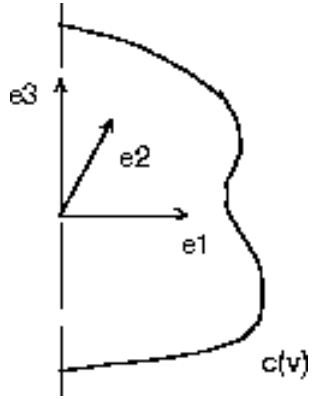
ProE-Oberflächen

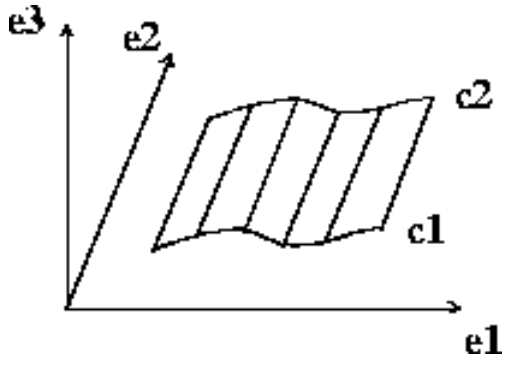


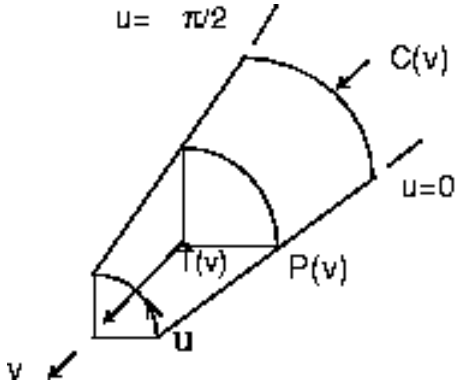


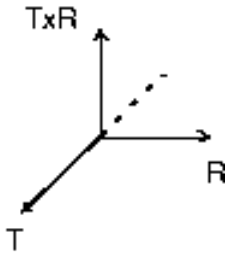


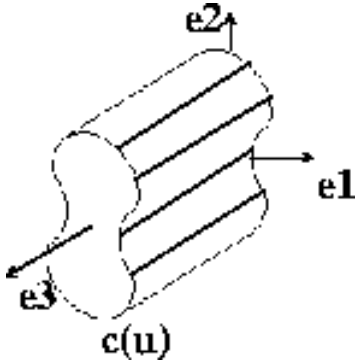


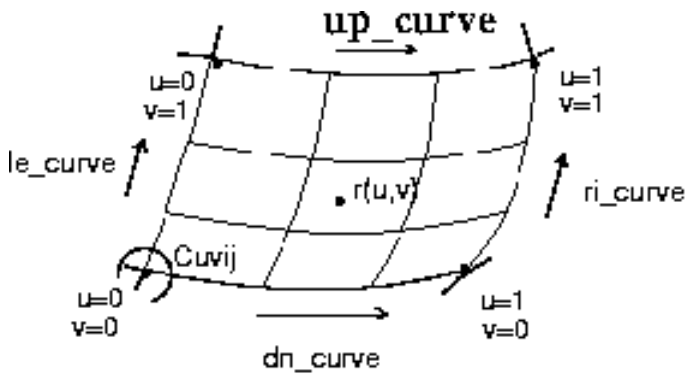


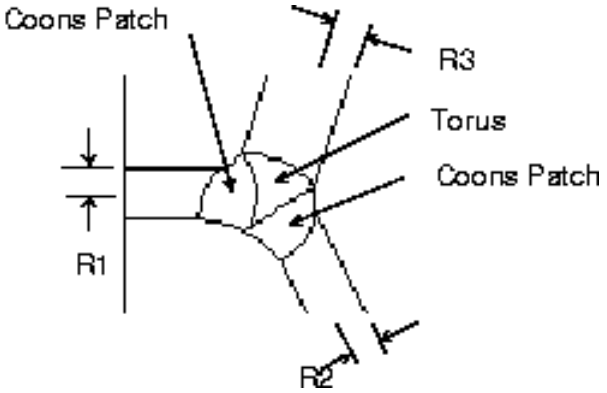




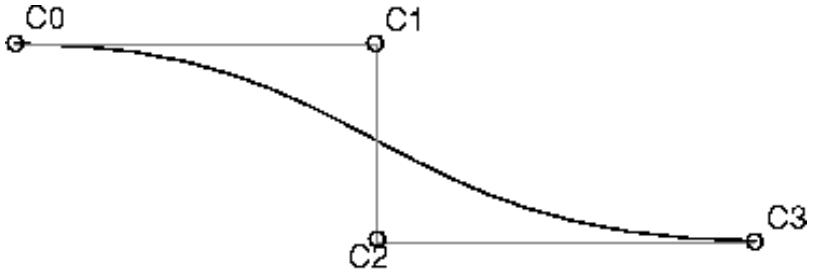




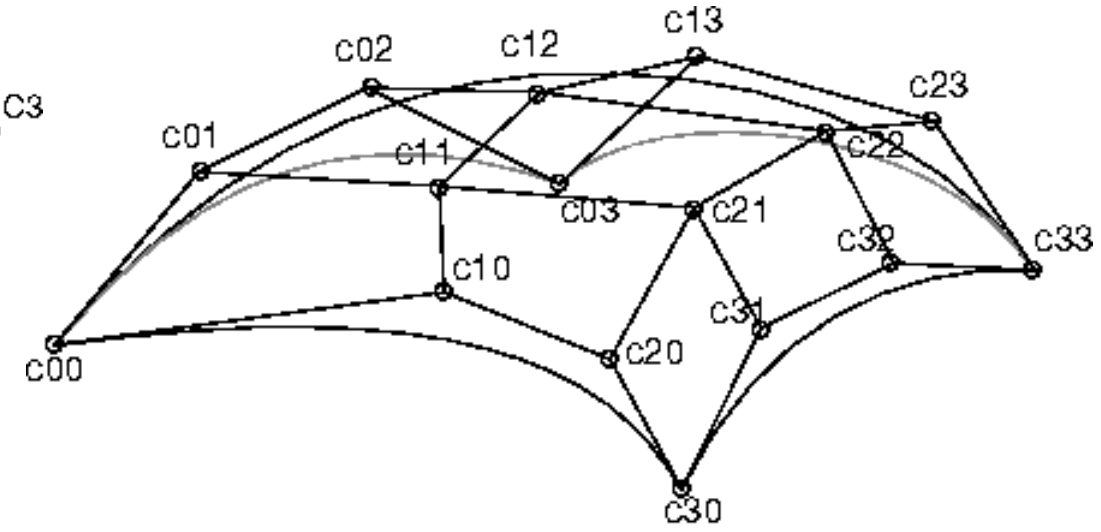




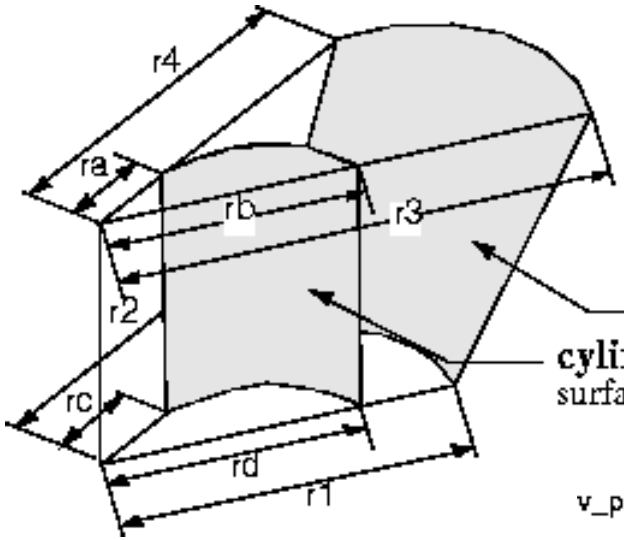
ProE-Oberflächen und -Kurven

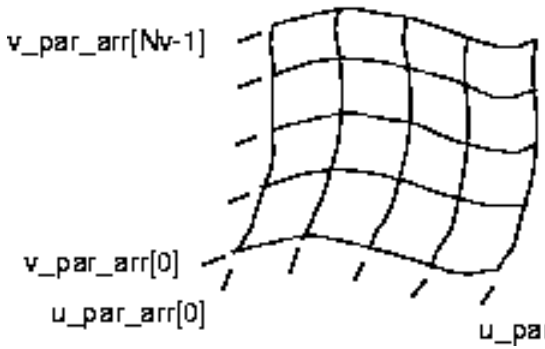
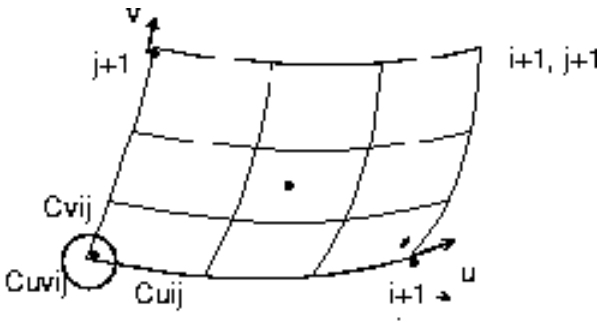


Cubic NURBS Curve



Cubic NURBS Surface



cone surface, S

cylindrical spline surface, S_0