CIP 法のマクロ　ソースコード

```
Sub macro2()
'
'
'
    Dim nx, ni, i, im, j, Sn As Integer
'   nx = 120
    Dim f(120), fd(120), fn(120), fdn(120) As Double
    Dim xl, dt, up As Double
    Dim xp, fp, pi As Double
    Dim a, b, dx, x, xi As Double
    Dim time, tt, u As Double
    Dim tint, etime As Double
'-------------------------------------------------
    ni = 101
    xl = 100#
    dt = 0.1
    up = 0.5
    xp = 5#
    fp = 0.5
    pi = 3.141592
    tint = 0.5
    etime = 200
'-------------------------------------------------
'変数の宣言と初期化
'-------------------------------------------------
    dx = xl / (ni - 1)
    For i = 1 To 101
        x = dx * (i - 1)
        If (x < xp) Then
            f(i) = fp / xp * x
        ElseIf (x < 2 * xp) Then
            f(i) = -fp / xp * x + 2 * fp
        Else
            f(i) = 0
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```
            End If

        Next i
'-------------------------------------------------------
        For i = 2 To ni - 1
            fd(i) = (f(i + 1) - f(i - 1)) / (2 * dx)
        Next i
        fd(1) = fd(2)
        fd(ni) = fd(ni - 1)
'-------------------------------------------------------
        time = 0
        tt = tint
        j = 0
100: If (tt > tint) Then
            tt = 0
            For i = 1 To ni
                x = dx * (i - 1)
                Cells(i, 1) = x
                Cells(i, 2 + j) = f(i)
            Next i
'           Cells(ni + 1, 2 + j) = "end"
            j = j + 1
        End If
        u = up * Sin(4 * pi / etime * time)
'-------------------------------------------------------
If (u > 0) Then
        Sn = 1
ElseIf (u < 0) Then
        Sn = -1
ElseIf (u = 0) Then
        Sn = 0
End If
'-------------------------------------------------------

        For i = 2 To ni
            im = i - Sn
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        a = -2 * (f(i) - f(im)) * Sn / dx ^ 3 + (fd(i) + fd(im)) / dx ^ 2
        b = -3 * (f(i) - f(im)) / dx ^ 2 + (fd(im) + 2 * fd(i)) * Sn / dx
        xi = -u * dt
        fn(i) = a * xi ^ 3 + b * xi ^ 2 + fd(i) * xi + f(i)
        fdn(i) = 3 * a * xi ^ 2 + 2 * b * xi + fd(i)
    Next i
'
    For i = 1 To ni
        f(i) = fn(i)
        fd(i) = fdn(i)
    Next i
    time = time + dt
    tt = tt + dt
    If (time > etime) Then GoTo 999
    GoTo 100
999:
End Sub
```