Spapina Expanin Shckfa Regulaied Buine Spem

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1. Introduction

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$$\begin{array}{c} \begin{array}{c} & (3) \\ 1_{\mathcal{T}} \end{array} \end{array} \xrightarrow{q} \begin{array}{c} & (3) \\ \end{array} \xrightarrow{q} \begin{array}{c} & (7) \\ \end{array} \xrightarrow{q} \begin{array}{c} & (7) \\ \end{array} \end{array} \xrightarrow{q} \begin{array}{c} & (7) \\ \end{array} \xrightarrow{q} \end{array} \xrightarrow{q} \end{array} \xrightarrow{q} \begin{array}{c} & (7) \\ \end{array} \xrightarrow{q} \end{array} \xrightarrow{q} \begin{array}{c} & (7) \\ \end{array} \xrightarrow{q} \end{array} \xrightarrow{q} \end{array} \xrightarrow{q} \begin{array}$$

$$u_{\pm} \quad h_{\pm} \left(\frac{2}{h - h} \right)^{1/2}$$
 (4)

2. Expansion shock Riemann data $h_t = (h_t) + (h_t)$

3. BBM approximation and the structure of the expansion shock





4. Expansion shock for the Boussinesq equations



$$r^{(.)} = \frac{1}{4\delta} (3r^{(.)} - s^{(.)})r^{(.)} - \frac{1}{6\delta^2} \left(r^{(.)} - s^{(.)}\right)$$

$$s^{(.)}$$

А

$$\frac{r^{(0)}, r^{(1)}, r^{(2)}, s^{(0)}, \qquad s^{(2)} \in r^{(1)}, \qquad (1) \in r \to 0, \ \delta \to 0, \ \to 0, \ (15), \ (1) = 1$$

ា (30) $a() = \frac{A}{\frac{9}{2}AK} = 1$, $f() = B \not \subset \left(\frac{B}{2K}\right)$. (31) A / 0 = B / 0 = 1 = 1 $B = 1. K = \frac{1}{2}.$ (32) $a() = \frac{A}{\frac{9}{2}A - 1}, \quad f() = \overleftarrow{()}$ (33) $A_{\tau} = A_{\tau} = A_{\tau} = A_{\tau} = \frac{4}{\tau} = \frac{1}{\tau} A_{\tau} = \frac{$ $r^{(-)}(-,-) = \frac{s^{(0)}}{3} - \frac{4}{9}A - \frac{1}{2} \left(- \frac{1}{2} \right) - (\epsilon^2).$ (34) $s^{(-)}(...) \quad s^{(0)} \quad (-^2)$ (35) (35) (35) (37) (34) (34) (35) (36) (36) (37) (35) $\frac{s^{(0)}}{r_{\pm}} \pm \langle A \rangle = (\langle a \rangle^2).$

(36)

 s_{\pm}



$$r^{(L)}(...) \sim 1 = \left(\frac{1}{4} - \frac{e^{-(L)}}{1 - \frac{9}{4}}\right)$$

$$\frac{e^{-2}}{3} \left(C - \frac{2 - 17 - e^{-2}(...) - D(e^{-1}(...) - E - e^{-1}(...))}{16(1 - \frac{9}{4})^2}\right).$$

$$s^{(L)}(...) \sim 3 - \frac{3}{4} = e^{-2} \left(C - \frac{3 - e^{-2}(...)}{16(1 - \frac{9}{4})^2}\right).$$

 $= r^{(+)} - \frac{1}{4}(3r^{(+)} - s^{(+)})r_X^{(+)} = 0.$ $= s^{(+)} - \frac{1}{4}(r^{(+)} - 3s^{(+)})r_X^{(+)} = 0.$ $= s^{(+)} - \frac{1}{4}(r^{(+)} - 3s^{(+)})s_X^{(+)} = 0.$ $= s^{(+)}(X, -) = 3 - \frac{3}{4} - \frac{1}{32}e^2 - \cdots .$ $= r^{(+)}(X, -) = 3 - \frac{3}{4} - \frac{1}{32}e^2 - \cdots .$ $= r^{(+)}(X, -) = 1 - e\left(-\frac{1}{4} - r_1(X, -) - e^2\left(-\frac{1}{96} - r_2(X, -) - \cdots \right)\right)$ $= r^{(+)}(X, -) = 1 - e\left(-\frac{1}{4} - r_1(X, -) - e^2\left(-\frac{1}{96} - r_2(X, -) - \cdots \right)\right)$ $= r^{(+)}(X, -) = 1 - e^{-1}(x, -) - e^{-1}(x, -)$

$$F_{X \to 0^{\pm}} r_{2}(X, \cdot) = F_{2}^{\pm} \frac{1}{\left(1 - \frac{9}{4}\right)^{2}} \longrightarrow_{\pm} r^{(2)}(\cdot, \cdot) = \frac{1}{24\left(1 - \frac{9}{4}\right)^{2}}.$$
 (60)

$$r_{2}(X, \cdot) = \frac{1}{24} \frac{3}{\left(1 - \frac{9}{4}\right)^{2}},$$
(61)
$$r_{1}(X, \cdot) = 1 - \left(\frac{1}{4} - \frac{1}{4} - \frac{3}{4} - \frac{3}{4}\right)$$

$$= \frac{e^{2}}{24} \left(\frac{1}{4} - \frac{1}{4} - \frac{3}{4}\right)$$











6. Discussion





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 $g_{n}(t) = \begin{cases} \frac{2L}{N} \sum_{m=N<2}^{N<2-1} x_{m}g(x_{m},t) & n = 0\\ \frac{g_{n}(t)}{ik_{n}} & n = 0 \end{cases}$ (A4)

 $\begin{array}{c} 1 \\ 1 \\ 2 \\ N \\ 2 \\ N \\ 2 \\ 1^{4} \\ 1^{$