Re: "Rockets not carrying fuel" for orbital transfer.

Source: http://sci.tech−archive.net/Archive/sci.physics/2004−12/1332.html

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From: George Dishman (*george_at_briar.demon.co.uk*)
Date: 11/25/04

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Date: Thu, 25 Nov 2004 20:33:42 −0000
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Much snipped to get to the physics, I understand
your concept.

"Robert Clark" <rgregoryclark@yahoo.com> wrote in message
news:832ea96d.0411201704.7de95ba@posting.google.com...

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> *[thrust] = (pressure)*(square area of ports)*

I'm tied up with other things so I can't give this
much time but I think the thrust will be the pressure
difference through the nozzle times the flow rate.
You certainly need to take conservation of momentum
into account. Both flow rate and pressure difference
will depend on the nozzle design, and I think what is
good for one is bad for the other.

> *Now remember the entire tubes weight is supported by these exhaust*
> *ports*

The mass in the pipe is accelerating so you need more
thrust, and the acceleration means there is a pressure
difference between the top and bottom of the section
which will accumulate as you go down the pipe.

Finally, as flow is being lost at each section, the
flow rate at the bottom is more than at the top, and
the difference grows as the pipe adds more sections.

All of these factors complicate the maths significantly.

George