This is a Very Important Title!

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This abstract is abstract.

I. INTRODUCTION

Assume constant pressure P and volume V. This means that the work $W = 0$, so that the change in internal energy $dU = dQ$. We also assume a constant number of particles N. In this condition we can use the definition of temperature, so that the temperature T is given by

$$T^{-1} = (\frac{\partial S}{\partial U})_{N,V},$$

where $S(T, N, V, P)$ is the entropy. Since we only have that S is a function of T we get that

$$T^{-1} = \frac{dS}{dU} = \frac{dS}{dQ} = \frac{dS}{dT}\frac{dT}{dQ}.$$

$$T^{-1}\frac{dQ}{dT} = \frac{dS}{dT}.$$

Under constant volume the heat capacity $C_V = (\partial U/\partial T)_{V,N}$, that becomes $C_V = (dQ/dT)$ in our case. We then get that

$$\frac{dS}{dT} = \frac{C_V}{T}. \tag{1}$$

This gives us that $dS = \frac{C_V}{T}dT$, which we can integrate.
ITS THE LIQUID PHASE.

The Einstein solid ...

We have that the multiplicity of an Einstein solid is

$$\Omega(N, q) = \frac{(q + N - 1)!}{q!(N - 1)!},$$

where N is the number of particles and q is the number of energy units $\hbar f$. If we use $N >> 1$, we can see that

$$\Omega(N, q) \approx \frac{(q + N)!}{q!N!}.$$

In the low temperature limit we have that $\Omega_{lowT}(q, N) \approx (\frac{Ne}{q})^q$, for $q << N$. And in the high temperature limit we have $\Omega_{highT}(q, N) \approx (\frac{qe}{N})^N$, for $N << q$.

Since we have already said that $N >> 1$, and we know that $q \geq N$ since the number of energy states has to be at least as large as the number of atoms ($q = N$ if all atoms are in the ground state). We can then use the Stirling approximation. This gives us that

$$\frac{(q + N)!}{q!N!} \approx \frac{(q + N)^{q+Ne^{-(q+N)}}}{q^q e^{-q} N^N e^{-N}} = (\frac{q + N}{q})^q(\frac{q + N}{N})^N$$

II. CONCLUSION

Assumptions: const V, P, N.

ACKNOWLEDGMENTS

I would like thank myself for writing this beautiful document.

REFERENCES

- Reference 1
- Reference 2

Appendix A: Name of appendix

This will be the body of the appendix.

Appendix B: This is another appendix

Tada.

Note that this document is written in the two-column format. If you want to display a large equation, a large figure, or whatever, in one-column format, you can do this like so:

This text and this equation are both in one-column format.
[?]

$$\frac{-\hbar^2}{2m}\nabla^2\Psi + V\Psi = i\hbar\frac{\partial}{\partial t}\Psi \tag{B1}$$

Note that the equation numbering (this: B1) follows the appendix as this text is technically inside Appendix B. If you want a detailed listing of (almost) every available math command, check: https://en.wikibooks.org/wiki/LaTeX/Mathematics.

And now we're back to two-column format. It's really easy to switch between the two. It's recommended to keep the two-column format, because it is easier to read, it's not very cluttered, etc. Pro Tip: You should also get used to working with REVTeX because it is really helpful in FYS2150.

One last thing, this is a code listing:

```
This will be displayed with a cool programming font!
```

You can add extra arguments using optional parameters:

```
This will be displayed with a cool programming font!
```

You can also list code from a file using `lstinputlisting`. If you're interested, check https://en.wikibooks.org/wiki/LaTeX/Source_Code_Listings.

This is a basic table:

Table I. This is a nice table

Hey	Hey	Hey
Hello	Hello	Hello
Bye	Bye	Bye

You can a detailed description of tables here: https://en.wikibooks.org/wiki/LaTeX/Tables.

I'm not going to delve into Tikz in any level detail, but here's a quick picture:

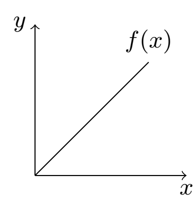

Figure 1. This is great caption

If you want to know more, check: https://en.wikibooks.org/wiki/LaTeX/PGF/TikZ.